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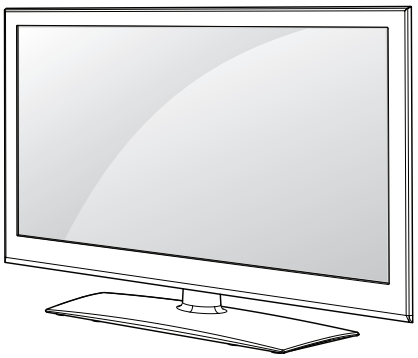
LED LCD TV
SERVICE MANUAL

CHASSIS : LD03X

MODEL : 32LV375H 32LV375H-ZA

CAUTION
BEFORE SERVICING THE CHASSIS,
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



P/NO : MFL63263135 (1107-REV00) Printed in Korea

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SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and Exploded View.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.

General Guidance

An **isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and it's components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1 W), keep the resistor 10 mm away from PCB.

Keep wires away from high voltage or high temperature parts.

Before returning the receiver to the customer,

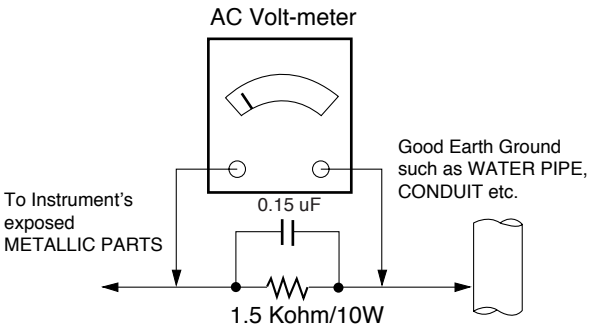
always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

Leakage Current Cold Check(Antenna Cold Check)
With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.
If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1 MΩ and 5.2 MΩ.
When the exposed metal has no return path to the chassis the reading must be infinite.
An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check (See below Figure)
Plug the AC cord directly into the AC outlet.

Do not use a line Isolation Transformer during this check.
Connect 1.5 K / 10 watt resistor in parallel with a 0.15 uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.
Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.
Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which is corresponds to 0.5 mA.
In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit



When 25A is impressed between Earth and 2nd Ground for 1 second, Resistance must be less than 0.1 Ω
*Base on Adjustment standard

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SPECIFICATION

NOTE : Specifications and others are subject to change without notice for improvement.

1. Application range

This specification is applied to the LCD TV used LD03X chassis.

2. Requirement for Test

Each part is tested as below without special appointment.

1) Temperature: 25 ºC ± 5 ºC(77 ºF ± 9 ºF), CST: 40 ºC ± 5 ºC
2) Relative Humidity : 65 % ± 10 %
3) Power Voltage
   : Standard input voltage (AC 100-240 V~, 50 / 60 Hz)
   * Standard Voltage of each products is marked by models.
4) Specification and performance of each parts are followed each drawing and specification by part number in accordance with BOM.
5) The receiver must be operated for about 5 minutes prior to the adjustment.

3. Test method

1) Performance: LGE TV test method followed
2) Demanded other specification
   - Safety : CE, IEC specification
   - EMC :CE, IEC

4. Module General Specification

No.	Item	Specification		Remark
1	Display Screen Device	80 cm(32 inch) wide color display module		
2	Aspect Ratio	16:9		
3	LCD Module	80 cm(32 inch) TFT LCD FHD 50 Hz		
4	Operating Environment	Temp. : 0 deg ~ 50 deg		
		Humidity : 10 % ~ 90 %		
5	Storage Environment	Temp. : -20 deg ~ 60 deg		
		Humidity : 10 ~ 90 %		
6	Input Voltage	AC 100-240 V~, 50 / 60 Hz		
7	Power Consumption	Power on (White)		
		LGD	Typ : 48.2	LCD (Module) + Backlight(EDGE LED)
8	Module Size	735.4(H) x 433.0(V) x 10.8(B)/23.6 mm(D)		With inverter
9	Pixel Pitch	0.36375 mm x 0.36375 mm		
10	Back Light	EDGE LED		
11	Display Colors	16.7 M colors		
12	Coating	3H(Hard coating), AG		

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5. Module optical specification

No.	Item	Specification		Min.	Typ.	Max.	Remark
1.	Viewing Angle<CR>10>	Right/Left/Up/Down		89			CR > 10
2.	Luminance	Luminance (cd/m^2)		290	360		
		Variation			-	1.3	MAX / MIN
3.	Contrast Ratio	CR		1000	1400		
4.	CIE Color Coordinates	White	Wx	Typ. -0.03	0.279	Typ. +0.03	
			Wy		0.292		
		RED	Rx		0.637		
			Ry		0.341		
		Green	Gx		0.325		
			Gy		0.606		
		Blue	Bx		0.152		
			By		0.055		

1) Standard Test Condition (The unit has been 'ON')
2) Stable for approximately 60 minutes in a dark environment at 25 ºC ± 2 ºC.
3) Operating Ambient Humidity : Min 10, max 90 %RH
4) Ta= 25 ºC ± 2 ºC, VLCD= 12.0 V, fV= 60 Hz

6. Component Video Input (Y, C_B/P_B, C_R/P_R)

No.	Specification				Remark
	Resolution	H-freq(kHz)	V-freq(Hz)		
1.	720x480	15.73	60.00	SDTV,DVD 480i	
2.	720x480	15.63	59.94	SDTV,DVD 480i	
3.	720x480	31.47	59.94	480p	
4.	720x480	31.50	60.00	480p	
5.	720x576	15.625	50.00	SDTV,DVD 625 Line	
6.	720x576	31.25	50.00	HDTV 576p	
7.	1280x720	45.00	50.00	HDTV 720p	
8.	1280x720	44.96	59.94	HDTV 720p	
9.	1280x720	45.00	60.00	HDTV 720p	
10.	1920x1080	31.25	50.00	HDTV 1080i	
11.	1920x1080	33.75	60.00	HDTV 1080i	
12.	1920x1080	33.72	59.94	HDTV 1080i	
13.	1920x1080	56.250	50	HDTV 1080p	
14.	1920x1080	67.5	60	HDTV 1080p	

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7. RGB (PC)

No.	Specification				Proposed	Remarks
	Resolution	H-freq(kHz)	V-freq(Hz)	Pixel Clock(MHz)		
1.	720*400	31.468	70.08	28.321		For only DOS mode
2.	640*480	31.469	59.94	25.17	VESA	Input 848*480 60 Hz, 852*480 60 Hz -> 640*480 60 Hz Display
3.	800*600	37.879	60.31	40.00	VESA	
4.	1024*768	48.363	60.00	65.00	VESA(XGA)	
5.	1280*768	47.78	59.87	79.5	WXGA	
6.	1360*768	47.72	59.8	84.75	WXGA	
7.	1280*1024	63.595	60.0	108.875	SXGA	FHD model
8.	1920*1080	66.587	59.93	138.625	WUXGA	FHD model

8. HDMI Input

(1) DTV Mode

No.	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)	Proposed	Remark
1.	720*480	31.469 / 31.5	59.94 / 60	27.00 / 27.03	SDTV 480P	
2.	720*576	31.25	50	54	SDTV 576P	
3.	1280*720	37.500	50	74.25	HDTV 720P	
4.	1280*720	44.96 / 45	59.94 / 60	74.17 / 74.25	HDTV 720P	
5.	1920*1080	33.72 / 33.75	59.94 / 60	74.17 / 74.25	HDTV 1080I	
6.	1920*1080	28.125	50.00	74.25	HDTV 1080I	
7.	1920*1080	26.97 / 27	23.97 / 24	74.17 / 74.25	HDTV 1080P	
8.	1920*1080	33.716 / 33.75	29.976 / 30.00	74.25	HDTV 1080P	
9.	1920*1080	56.250	50	148.5	HDTV 1080P	
10.	1920*1080	67.43 /67.5	59.94 / 60	148.35 / 148.50	HDTV 1080P	

(2) PC Mode

No.	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)	Proposed	Remark
1.	720*400	31.468	70.08	28.321		HDCP
2.	640*480	31.469	59.94	25.17	VESA	HDCP
3.	800*600	37.879	60.31	40.00	VESA	HDCP
4.	1024*768	48.363	60.00	65.00	VESA(XGA)	HDCP
5.	1280*768	47.78	59.87	79.5	WXGA	HDCP
6.	1360*768	47.72	59.8	84.75	WXGA	HDCP
7.	1280*1024	63.595	60.0	108.875	SXGA	HDCP/FHD model
8.	1920*1080	67.5	60.00	138.625	WUXGA	HDCP/FHD model

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ADJUSTMENT INSTRUCTION

1. Application Range

This specification sheet is applied to all of the LCD TV with LD03X chassis.

2. Designation

(1) Because this is not a hot chassis, it is not necessary to use an isolation transformer. However, the use of isolation transformer will help protect test instrument.
(2) Adjustment must be done in the correct order.
(3) The adjustment must be performed in the circumstance of 25 ºC ± 5 ºC of temperature and 65 % ±10 % of relative humidity if there is no specific designation.
(4) The input voltage of the receiver must keep AC 100-240 V~, 50 / 60Hz.
(5) The receiver must be operated for about 5 minutes prior to the adjustment when module is in the circumstance of over 15.

In case of keeping module is in the circumstance of 0 °C, it should be placed in the circumstance of above 15 °C for 2 hours

In case of keeping module is in the circumstance of below -20 °C, it should be placed in the circumstance of above 15 °C for 3 hours.

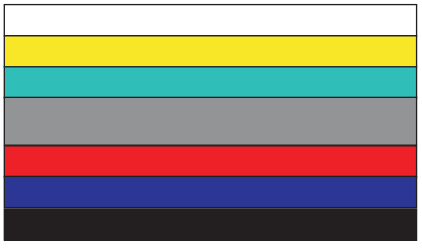
[Caution]
When still image is displayed for a period of 20 minutes or longer (especially where W/B scale is strong. Digital pattern 13ch and/or Cross hatch pattern 09ch), there can some afterimage in the black level area.

3. Automatic Adjustment

3.1. ADC Adjustment

(1) Overview
ADC adjustment is needed to find the optimum black level and gain in Analog-to-Digital device and to compensate RGB deviation.

(2) Equipment & Condition
1) Jig (RS-232C protocol)
2) MSPG-925 Series Pattern Generator(MSPG-925FA, pattern - 65)
- Resolution : 480i Comp1
1080p Comp1
1080p RGB
- Pattern : Horizontal 100% Color Bar Pattern
- Pattern level : 0.7 ± 0.1 Vp-p
- Image



(3) Adjustment
1) Adjustment method
- Using RS-232, adjust items in the other shown in "3.1.(3).3)"

2) Adj. protocol

Protocol	Command	Set ACK
Enter adj. mode	aa 00 00	a 00 OK00x
Source change	xb 00 40	b 00 OK40x (Adjust 480i, 1080p Comp1)
	xb 00 60	b 00 OK60x (Adjust 1920*1080 RGB)
Begin adj.	ad 00 10	
Return adj. result		OKx (Case of Success)
		NGx (Case of Fail)
Read adj. data	(main)	(main : component1 480i, RGB 1080p)
	ad 00 20	00000000000000000000000007c007b006dx
	(main)	(main : component1 1080p)
	ad 00 30	00000007000000000000000007c00830077x
Confirm adj.	ad 00 99	NG 03 00x (Fail)
		NG 03 01x (Fail)
		NG 03 02x (Fail)
		OK 03 03x (Success)
End adj.	aa 00 90	a 00 OK90x

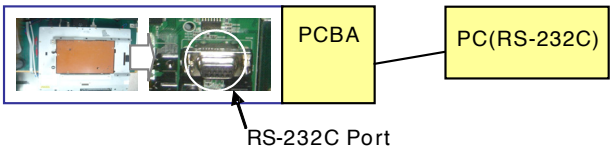
Ref.) ADC Adj. RS232C Protocol_Ver1.0

3) Adj. order
- aa 00 00 [Enter ADC adj. mode]
- xb 00 40 [Change input source to Component1(No action)]
- ad 00 10 [Adjust 480i Comp1]
- ad 00 10 [Adjust 1080p Comp1]
- xb 00 60 [Change input source to RGB(No action)]
- ad 00 10 [Adjust 1080p RGB]
- ad 00 90 End adj.

3.2. MAC Address

(1) Equipment & Condition
- Play file: Serial.exe
- MAC Address edit
- Input Start / End MAC address

(2) Download method
1) Communication Prot connection



Connect: PCBA Jig-> RS-232C Port== PC-> RS-232C Port

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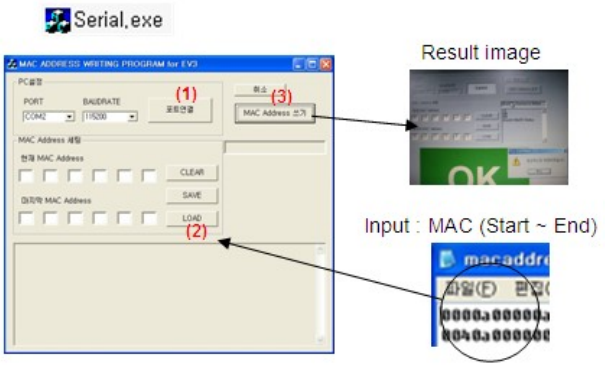
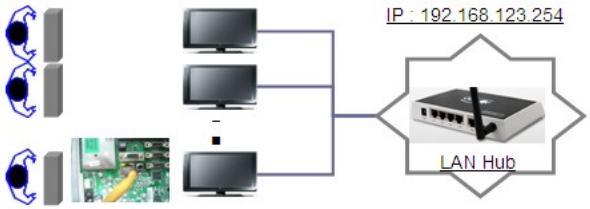
2) MAC Address Download
- Com 1,2,3,4 and 115200(Baud rate)
- Click “Port connection” button(1).



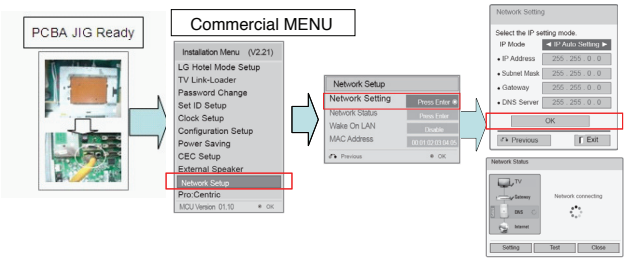
- Click “Load” button(2) for MAC Address write.
- Click “MAC Address write” button(3)
- Check the OK Or NG.

3.3. LAN

(1) Equipment & Condition
■ Each other connection to LAN Port of IP Hub and Jig



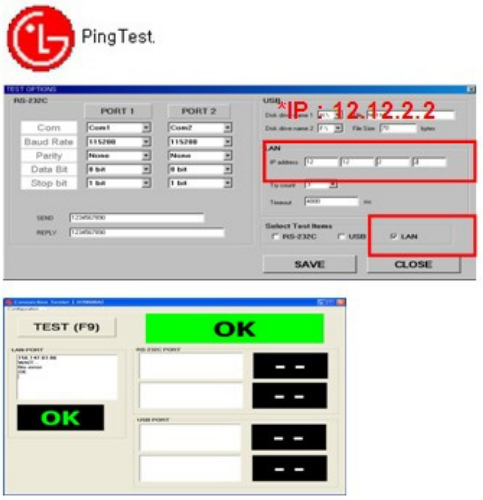
(2) LAN inspection solution
■ LAN Port connection with PCB
■ Network setting at MENU Mode of Installation Menu
- “In-start” key input -> “menu” key input -> Installation Menu
- Network Setup -> Network Setting --> Press “Enter” -> IP Auto Setting -> OK
■ setting automatic IP
■ Setting state confirmation
-> If automatic setting is finished, you confirm IP and MAC Address.



3.4. LAN PORT INSPECTION(PING TEST)

Connect SET -> LAN port == PC -> LAN Port

(1) Equipment setting
1) Play the LAN Port Test PROGRAM.
2) Input IP set up for an inspection to Test Program.
*IP Number : 12.12.2.2
(2) LAN PORT inspection (PING TEST)
1) Play the LAN Port Test Program.
2) Connect each other LAN Port Jack.
3) Play Test (F9) button and confirm OK Message.
4) Remove LAN cable.



3.5. Model name & serial number download

(1) Model name & Serial number D/L
■ Press “Power on” key of service remote control. (Baud rate : 115200 bps)
■ Connect RS232 Signal Cable to RS-232 Jack.
■ Write Serial number by use RS-232.
■ Must check the serial number at Instart menu.

(2) Method & notice
A. Serial number D/L is using of scan equipment.
B. Setting of scan equipment operated by Manufacturing Technology Group.
C.Serial number D/L must be conformed when it is produced in production line, because serial number D/L is mandatory by D-book 4.0.

* Manual Download (Model Name and Serial Number)
If the TV set is downloaded by OTA or service man, sometimes model name or serial number is initialized.(Not always)
There is impossible to download by bar code scan, so It need Manual download.
a. Press the ‘Instart’ key of Adjustment remote control.
b. Go to the menu ‘5.Model Number D/L’ like below photo.
c. Input the Factory model name(ex 42LD450-ZA) or Serial number like photo.
d. Check the model name Instart menu. -> Factory name displayed. (ex 42LE7500-ZA)
e. Check the Diagnostics. (DTV country only) -> Buyer model displayed. (ex 42LE7500-ZA)

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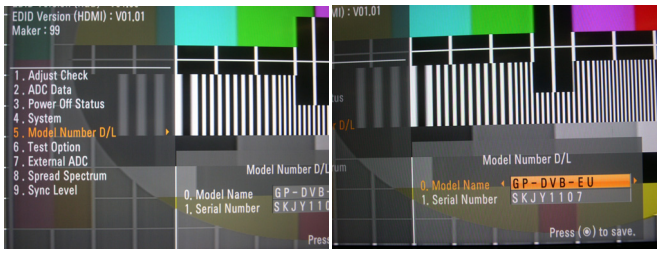
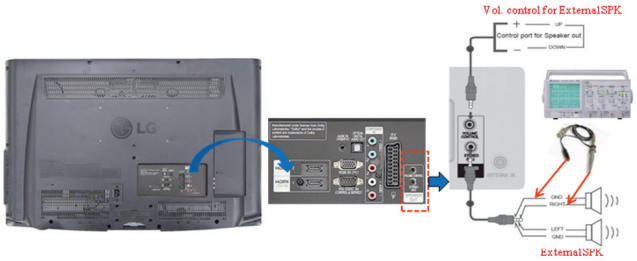


4. Check Commercial Features

4.1. External SPK Out and Volume control



4.1.1. Equipment & Condition

- Jig(Speaker out JIG, Speaker out control Jig) or Oscilloscope
- Power only mode

4.1.2. Check the speaker out & control

1) Connect the External Speaker : Check the sound.
2) Press the “+” key on the control Jig : Check the Max output.
3) Press the “-” key on the control Jig : Check the Min output.
   Connect oscilloscope, you can see this waveform.

Button of Vol. control	Waveform of Oscilloscope
UP(+)	
DOWN(-)	

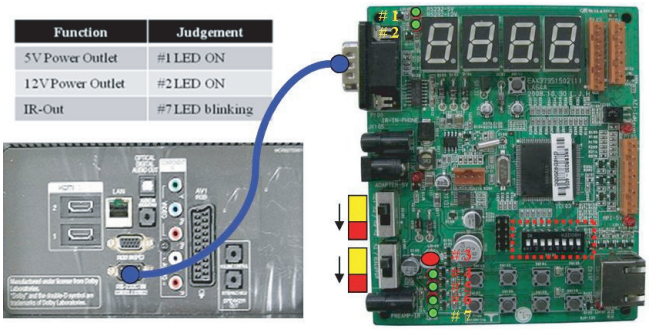
Recommended Input Signal
: RF, 1 KHz, Sine wave

4.2. IR Out and DC Power Outlet(5 V / 12 V)

4.2.1. Equipment & Condition

- Jig (commercial check JIG)
- Special 232C Cable for commercial check Jig
- Power only mode

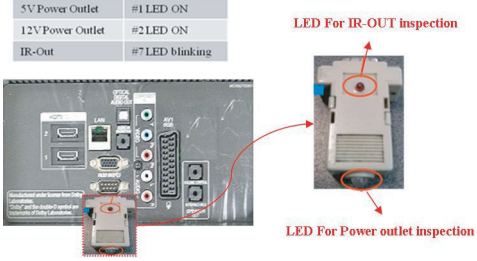
Function	Judgement
5V Power Outlet	#1 LED ON
12V Power Outlet	#2 LED ON
IR-Out	#7 LED blinking



4.2.2. Check the power out & IR out - commercial check jig

1) Connect each other RS232C port on the Commercial Check JIG.
2) Press RED Color key on Service remote control.
3) Check the LED of jig board.
   - +12V / +5V LED (OK condition: Turn On)
   - IR LED (OK condition: blinking)

Function	Judgement
5V Power Outlet	#1 LED ON
12V Power Outlet	#2 LED ON
IR-Out	#7 LED blinking



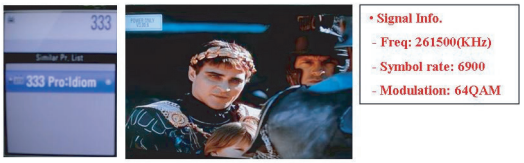
4.2.3. Check the power out & IR out - mini jig

1) Connect mini jig on RS232c port.
2) Press RED Color key on Service remote control.
3) Check the LED of mini jig.

4.3. Pro:Idiom

1) Connect the RF Cable.
2) Turn to the Pro:Idiom channel (No. 333).
3) Check the video & sound.

** Only displayed at “POWER ONLY” mode



4.4. Front LED Clock

1) Check the LED Clock in Power only mode.

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5. Manual Adjustment

5.1. ADC Adjustment

5.1.1. Overview

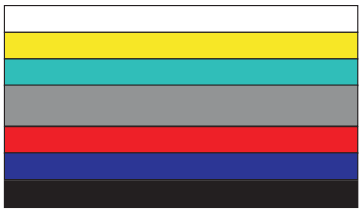
ADC adjustment is needed to find the optimum black level and gain in Analog-to-Digital device and to compensate RGB deviation.

5.1.2. Equipment & Condition

(1) Adjustment remote coontrol

(2) 801GF(802B, 802F, 802R) or MSPG925FA Pattern Generator

- Resolution :
  480i, Comp1 (MSPG-925FA: Model-209, Pattern-65)
  1080p Comp1 (MSPG-925FA: Model: 225, Pattern-65)'
  1080p RGB (MSPG-925FA: Model-225, Pattern-65)
- Pattern : Horizontal 100% Color Bar Pattern
- Pattern level: 0.7 ± 0.1 Vp-p
- Image



(3) Must use standard cable

5.1.3. Adjust method

(1) ADC 480i/1080p Comp1, RGB

1) Check connected condition of Comp1 cable to the equipment.
2) Give a 480i, Horizontal 100% Color Bar Pattern to Comp1.(MSPG-925FA -> Model: 209, Pattern: 65)
3) Change input mode as Component1 and picture mode as "Standard".
4) Press the In-start Key on the ADJ remote control after at least 1 min of signal reception. Then, select '7. External ADC'. And press OK or Right key for going to sub menu.
5) Press OK in Comp 480i menu.
6) Give a 1080p Mode, Horizontal 100% Color Bar Pattern to Comp1. (MSPG-925A -> Model: 225, Pattern: 65)
7) Press OK in Comp 1080p menu.
8) Press OK in RGB menu.
9) If ADC Comp is successful, "ADC Component Success" is displayed.
   If ADC calibration is failure, "ADC Component Fail" is displayed.
10) If ADC calibration is failure, after recheck ADC pattern or condition, retry calibration
11) If ADC RGB is successful, "ADC RGB Success" is displayed. If ADC calibration is failure, "ADC RGB Fail" is displayed.
12) If ADC calibration is failure, after recheck ADC pattern or condition, retry calibration Error message refer to 5).

5.2. EDID(The Extended Display Identification Data)/DDC(Display Data Channel) download

(1) Overview

It is a VESA regulation. A PC or a MNT will display an optimal resolution through information sharing without any necessity of user input. It is a realization of "Plug and Play".

(2) Equipment

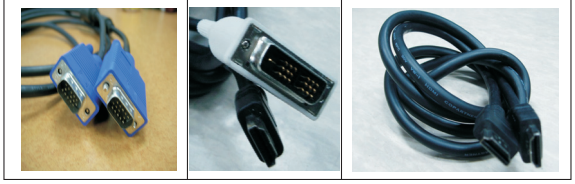
- Since embedded EDID data is used, EDID download JIG, HDMI cable and D-sub cable are not need.
- Adjustment remote control

(3) Download method

1) Press ADJ key on the Adjustment remote control
2) Select EDID D/L menu.
3) By pressing Enter key, EDID download will begin.
4) If Download is successful, OK is display, but If Download is failure, NG is displayed.
5) If Download is failure, Re-try download.

<Caution>
When EDID Download, must remove RGB/HDMI Cable.

For Analog EDID	For HDMI EDID
D-sub to D-sub	DVI-D to HDMI or HDMI to HDMI



(4) EDID DATA

■ HDMI

	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0x00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	ⓐ		ⓑ			
0x01	ⓒ		01	03	80	10	09	78	0A	EE	91	A3	54	4C	99	26
0x02	0F	50	54	A1	08	00	71	4F	81	80	01	01	01	01	01	01
0x03	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
0x04	45	00	A0	5A	00	00	00	1E	01	1D	00	72	51	D0	1E	20
0x05	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	3A
0x06	3E	1E	53	10	00	0A	20	20	20	20	20	20	ⓓ			
0x07	ⓓ														01	ⓔ
0x00	02	03	26	F1	4E	10	1F	84	13	05	14	03	02	12	20	21
0x01	22	15	01	26	15	07	50	09	57	07	67		ⓕ			
0x02	ⓕ		E3	05	03	01	01	1D	80	18	71	1C	16	20	58	2C
0x03	25	00	A0	5A	00	00	00	9E	01	1D	00	80	51	D0	1A	20
0x04	6E	88	55	00	A0	5A	00	00	00	1A	02	3A	80	18	71	38
0x05	2D	40	58	2C	45	00	A0	5A	00	00	00	1E	66	21	50	B0
0x06	51	00	1B	30	40	70	36	00	A0	5A	00	00	00	1E	00	00
0x07	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01	ⓔ2

■ RGB

	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0x00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	ⓐ		ⓑ			
0x01	ⓒ		01	03	68	10	09	78	0A	EE	91	A3	54	4C	99	26
0x02	0F	50	54	A1	08	00	81	80	61	40	45	40	31	40	01	01
0x03	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
0x04	45	00	A0	5A	00	00	00	1E	01	1D	00	72	51	D0	1E	20
0x05	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	3A
0x06	3E	1E	53	10	00	0A	20	20	20	20	20	20	ⓓ			
0x07	ⓓ														00	ⓔ3

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* Address 10/11 and 7F means Manufacture Week and Checksum. So this data will be change.

■ Detail EDID Options are below (ⓐ, ⓑ, ⓒ, ⓓ, ⓔ,ⓕ)

ⓐ Product ID

Model Name	HEX	EDID Table	DDC Function
FHD Model	0001	01 00	Analog
	0001	01 00	Digital

ⓑ Serial No. : Controlled on product line

ⓒ Month, Year: Controlled on production line:

ex) Monthly : '01' -> '01'

Year : '2010' -> '14'

ⓓ Model Name(Hex):

MODEL	MODEL NAME(HEX)
LG TV	00 00 00 FC 00 4C 47 20 54 56 0A 20 20 20 20 20 20 20

ⓔ Checksum: Changeable by total EDID data.

FHD	ⓔ1	ⓔ2	ⓔ3
HDMI1	D7	11	X
HDMI2	D7	01	X
RGB	X	X	1D

ⓕ Vendor Specific(HDMI)_FHD Model

INPUT	MODEL NAME(HEX)
HDMI1	67 03 0C 00 10 00 B8 2D
HDMI2	67 03 0C 00 20 00 B8 2D

5.3. White Balance Adjustment

5.3.1. Overview

(1) W/B adj. Objective & How-it-works

(2) Objective: To reduce each Panel's W/B deviation

(3) How-it-works : When R/G/B gain in the OSD is at 192, it means the panel is at its Full Dynamic Range. In order to prevent saturation of Full Dynamic range and data, one of R/G/B is fixed at 192, and the other two is lowered to find the desired value.

(4) Adj. condition : normal temperature

1) Surrounding Temperature : 25 ºC ± 5 ºC

2) Warm-up time: About 5 Min

3) Surrounding Humidity : 20 % ~ 80 %

5.3.2. Equipment

1) Color Analyzer: CA-210 (CCFL/EEFL -> CH 9)

2) Adj. computer(During auto adj., RS-232C protocol is needed)

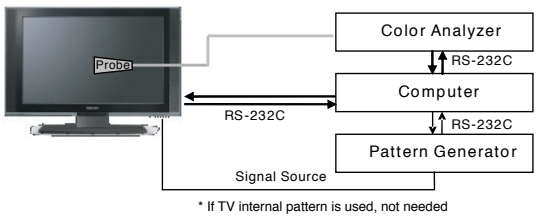
3) Adjustment remote control

4) Video Signal Generator MSPG-925F 720p/216-Gray (Model:217, Pattern:78)

-> Only when internal pattern is not available

■ Color Analyzer Matrix should be calibrated using CS-1000.

5.3.3. Equipment connection MAP



* If TV internal pattern is used, not needed

5.3.4. Adj. Command (Protocol)

■ RS-232C Command used during auto-adj.

RS-232C COMMAND [CMD	ID	DATA]	Explanation
wb	00	00	Begin White Balance adj.
wb	00	10	Gain adj.(internal white pattern)
wb	00	1f	Gain adj. completed
wb	00	20	Offset adj.(internal white pattern)
wb	00	2f	Offset adj. completed
wb	00	ff	End White Balance adj.(Internal pattern disappears)

Ex) wb 00 00 -> Begin white balance auto-adj.
wb 00 10 -> Gain adj.
ja 00 ff -> Adj. data
jb 00 c0
...
...
wb 00 1f -> Gain adj. completed
*(wb 00 20(Start), wb 00 2f(completed)) -> Off-set adj.
wb 00 ff -> End white balance auto-adj.

■ Adj. Map

	ITEM	Command		Data Range (Hex.)		Default (Decimal)
		Cmd 1	Cmd 2	Min	Max	
Cool	R-Gain	j	g	00	C0	
	G-Gain	j	h	00	C0	
	B-Gain	j	i	00	C0	
	R-Cut					
	G-Cut					
	B-Cut					
Medium	R-Gain	j	a	00	C0	
	G-Gain	j	b	00	C0	
	B-Gain	j	c	00	C0	
	R-Cut					
	G-Cut					
	B-Cut					
Warm	R-Gain	j	d	00	C0	
	G-Gain	j	e	00	C0	
	B-Gain	j	f	00	C0	
	R-Cut					
	G-Cut					

5.3.5. Adj. method

(1) Auto adj. method

1) Set TV in adj. mode using POWER ON key.

2) Zero calibrate probe then place it on the center of the Display.

3) Connect Cable (RS-232C).

4) Select mode in adj. Program and begin adjustment.

5) When adj. is complete (OK Sign), check adj. status pre mode. (Warm, Medium, Cool)

6) Remove probe and RS-232C cable to complete adj..

■ W/B Adj. must begin as start command "wb 00 00" , and finish as end command "wb 00 ff", and Adj. offset if need.

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(2) Manual adj. method

1) Set TV in Adj. mode using POWER ON.
2) Zero Calibrate the probe of Color Analyzer, then place it on the center of LCD module within 10 cm of the surface.
3) Press ADJ key -> EZ adjust using adjustment remote control. -> White-Balance then press the cursor to the right key(►). (When Key(►) is pressed 216 Gray internal pattern will be displayed)
4) One of R Gain / G Gain / B Gain should be fixed at 192, and the rest will be lowered to meet the desired value.
5) Adj. is performed in COOL, MEDIUM, WARM 3 modes of color temperature.

■ If internal pattern is not available, use RF input. In EZ Adj. menu 6.White Balance, you can select one of 2 Test-pattern: ON, OFF. Default is inner(ON). By selecting OFF, you can adjust using RF signal in 216 Gray pattern.

■ Adj. condition and cautionary items

1) Lighting condition in surrounding area
Surrounding lighting should be lower 10 lux. Try to isolate adj. area into dark surrounding.
2) Probe location: Color Analyzer(CA-210) probe should be within 10 cm and perpendicular of the module surface. (80° ~ 100°)
3) Aging time
- After Aging Start, Keep the Power ON status during 5 Minutes.
- In case of LCD, Back-light on should be checked using no signal or Full-white pattern.

5.3.6. Reference (White Balance Adj. coordinate and temperature)

■ Luminance : 216 Gray

■ Standard color coordinate and temperature using CS-1000 (over 26 inch)

Mode	Color Coordination		Temp	ΔUV
	x	y		
COOL	0.269	0.273	13000 K	0.0000
MEDIUM	0.285	0.293	9300 K	0.0000
WARM	0.313	0.329	6500 K	0.0000

■ Standard color coordinate and temperature using CA-210(CH 9)

Mode	Color Coordination		Temp	ΔUV
	x	y		
COOL	0.269 ± 0.002	0.273 ± 0.002	13000 K	0.0000
MEDIUM	0.285 ± 0.002	0.293 ± 0.002	9300 K	0.0000
WARM	0.313 ± 0.002	0.329 ± 0.002	6500 K	0.0000

■ Edge LED W/B Table in process of time(Only LGD module)
CA210 : CH 14, Test signal : Inner pattern(80 IRE)

GP2	Aging Time (Min.)	Cool		Medium		Warm	
		X	Y	X	Y	X	Y
		269	273	285	293	313	329
1	0-2	279	288	295	308	319	338
2	3-5	278	286	294	306	318	336
3	6-9	277	285	293	305	317	335
4	10-15	276	283	292	303	316	333
5	20-35	274	280	290	300	314	330
6	36-49	272	277	288	297	312	327
7	50-79	271	275	287	295	311	325
8	80~149	270	274	286	294	310	324
9	Over~150	269	273	285	293	309	323

5.4. HDCP(High-bandwidth Digital Contents Protection) SETTING

- HDCP setting is not necessary in BCM model.

5.5. EYE-Q function check

Step 1) Turn on TV.
Step 2) Press EYE key of Adjustment remote control.
Step 3) Cover the Eye Q II sensor on the front of the using your hand and wait for 6 seconds.
Step 4) Confirm that R/G/B value is lower than 10 of the “Raw Data (Sensor data, Back light)”. If after 6 seconds, R/G/B value is not lower than 10, replace Eye Q II sensor.
Step 5) Remove your hand from the Eye Q II sensor and wait for 6 seconds.
Step 6) Confirm that “ok” pop up. If change is not seen, replace Eye Q II sensor.

5.6. Tool Option selection

- Method : Press ADJ key on the Adjustment remote control, then select Tool option.

MODEL	Tool 1	Tool 2	Tool 3	Tool 4	Tool 5
32LV375H	17761	12834	55332	22797	1059

5.7. Ship-out mode check(In-stop)

After final inspection, press IN-STOP key of the Adjustment remote control and check that the unit goes to Stand-by mode. After final inspection, Always turn on the Mechanical S/W.

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6. GND and Internal Pressure check

6.1. Method

1) GND & Internal Pressure auto-check preparation
   - Check that Power Cord is fully inserted to the SET. (If loose, re-insert)
2) Perform GND & Internal Pressure auto-check
   - Unit fully inserted Power cord, Antenna cable and A/V arrive to the auto-check process.
   - Connect D-terminal to AV JACK TESTER.
   - Auto CONTROLLER(GWS103-4) ON
   - Perform GND TEST.
   - If NG, Buzzer will sound to inform the operator.
   - If OK, changeover to I/P check automatically. (Remove CORD, A/V form AV JACK BOX)
   - Perform I/P test
   - If NG, Buzzer will sound to inform the operator.
   - If OK, Good lamp will lit up and the stopper will allow the pallet to move on to next process.

6.2. Checkpoint

- TEST voltage
  - GND: 1.5 KV/min at 100 mA
  - SIGNAL: 3 KV/min at 100 mA
- TEST time: 1 second
- TEST POINT
  - GND TEST = POWER CORD GND & SIGNAL CABLE METAL GND
  - Internal Pressure TEST = POWER CORD GND & LIVE & NEUTRAL
- LEAKAGE CURRENT: At 0.5 mArms

7. Audio

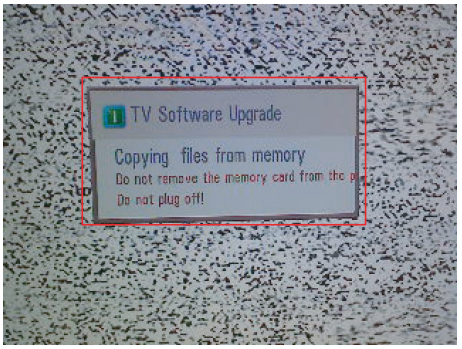
No.	Item	Min.	Typ.	Max.	Unit	
1.	Audio practical max Output, L/R	9.0	10.0	12.0	W	EQ Off AVL Off
	(Distortion=10% max Output)	8.5	8.9	9.8	Vrms	Clear Voice Off
2.	Speaker (8 Ω Impedance)		10.0	15.0	W	EQ On AVL On Clear Voice On

Measurement condition:
1. RF input: Mono, 1 KHz sine wave signal, 100 % Modulation
2. CVBS, Component: 1 KHz sine wave signal 0.4 Vrms
3. RGB PC: 1 KHz sine wave signal 0.7 Vrms

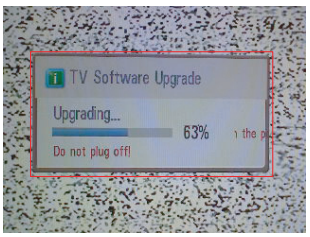
8. USB S/W Download

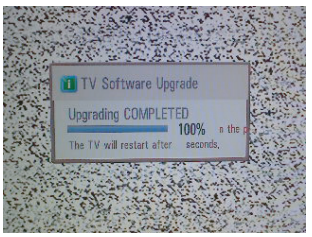
(option, Service only)

1) Put the USB Stick to the USB socket.
2) Automatically detecting update file in USB Stick
   - If your downloaded program version in USB Stick is Low, it didn't work. But your downloaded version is High, USB data is automatically detecting.
3) Show the message "Copying files from memory".



4) Updating is starting.





5) Updating Completed, The TV will restart automatically
6) If your TV is turned on, check your updated version and Tool option. (explain the Tool option, next stage)
   * If downloading version is more high than your TV have, TV can lost all channel data. In this case, you have to channel recover. if all channel data is cleared, you didn't have a DTV/ATV test on production line.

* After downloading, have to adjust TOOL OPTION again.
1. Push "IN-START" key in service remote control.
2. Select "Tool Option 1" and push "OK" key.
3. Punch in the number. (Each model has their number.)

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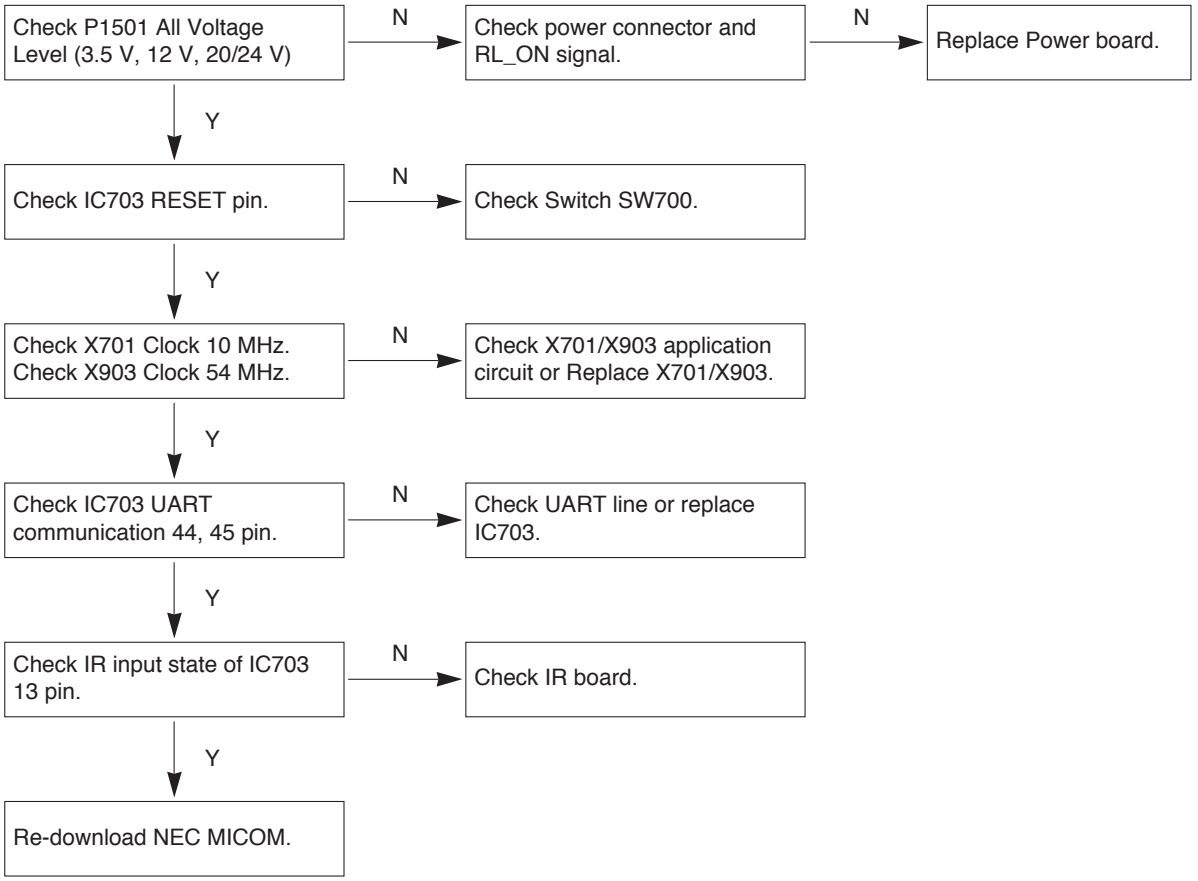
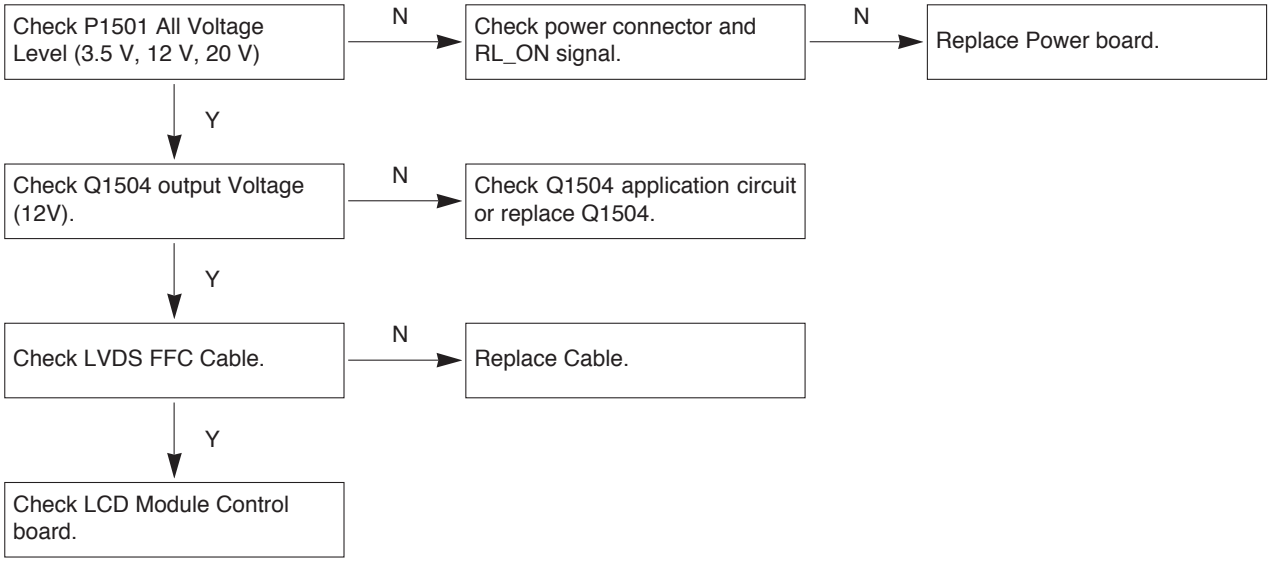
TROUBLE SHOOTING GUIDE

1. Power-Up Boot Fail Trouble Shooting guide



2. No OSD Trouble Shooting guide



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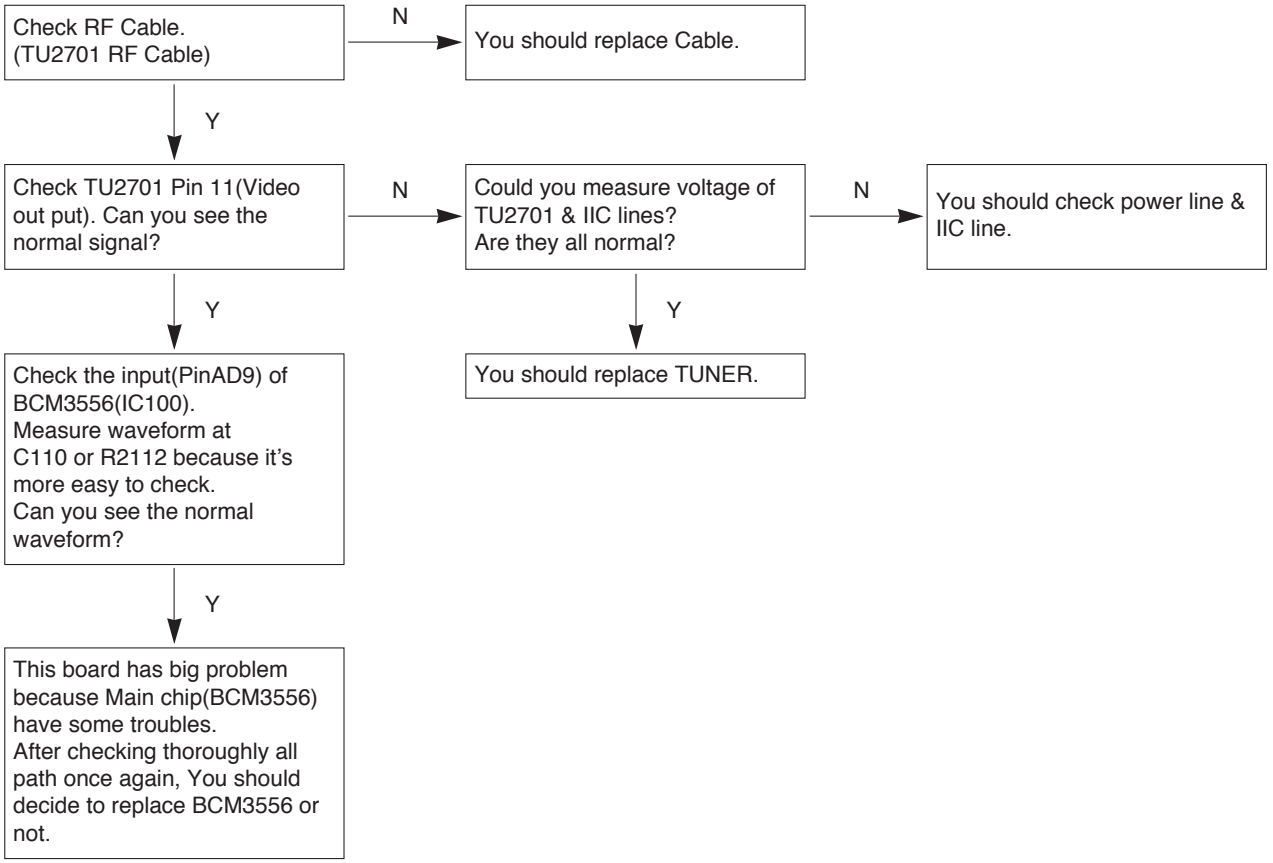
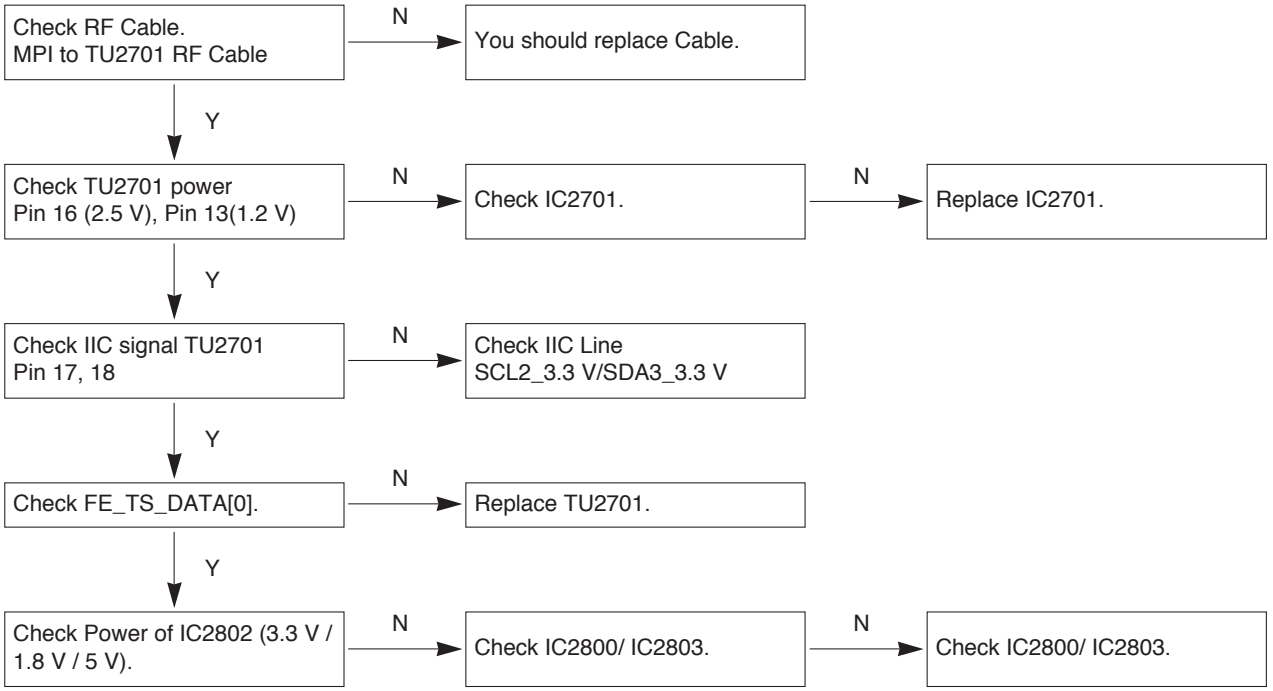
3. Analog RF Video Trouble Shooting guide



4. Digital RF Trouble Shooting guide



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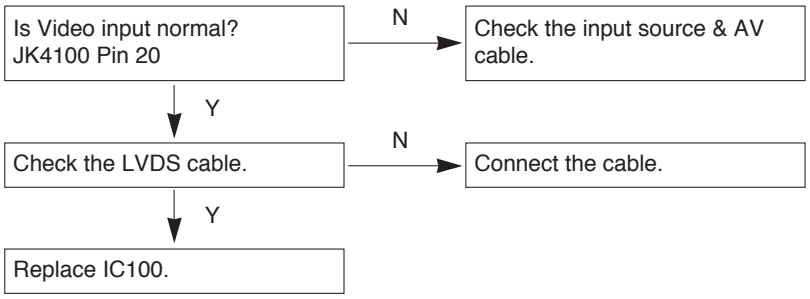
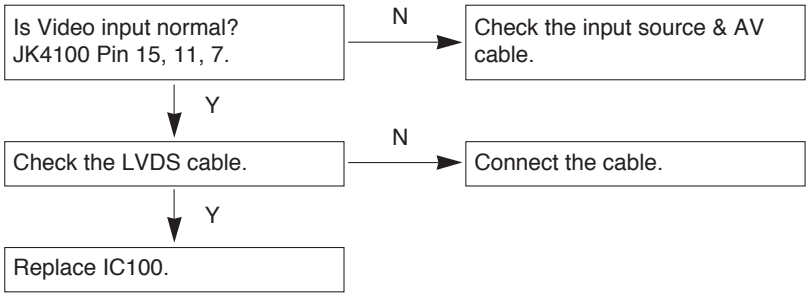
5. AV1(SCART) Video Trouble Shooting guide

- CVBS input

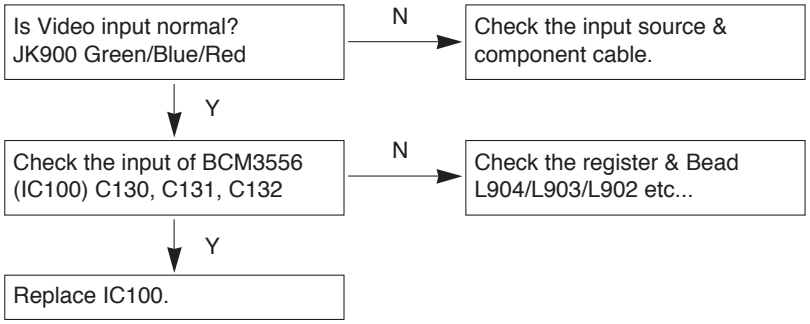


- RGB input

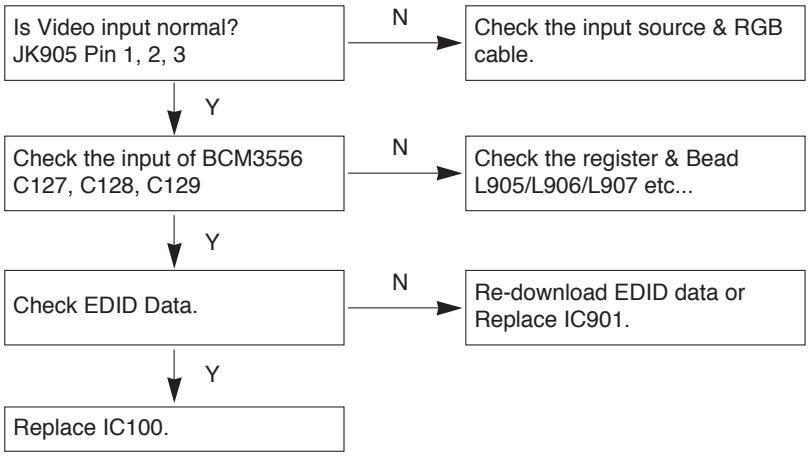


6. Component/RGB Video Trouble Shooting guide

- Component input



- RGB input



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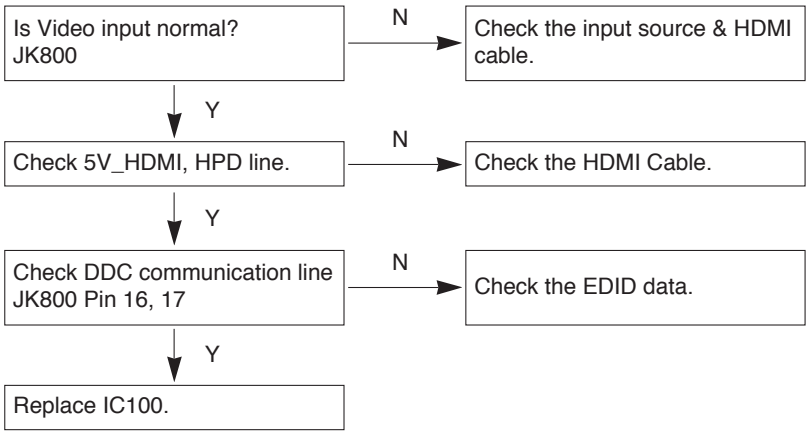
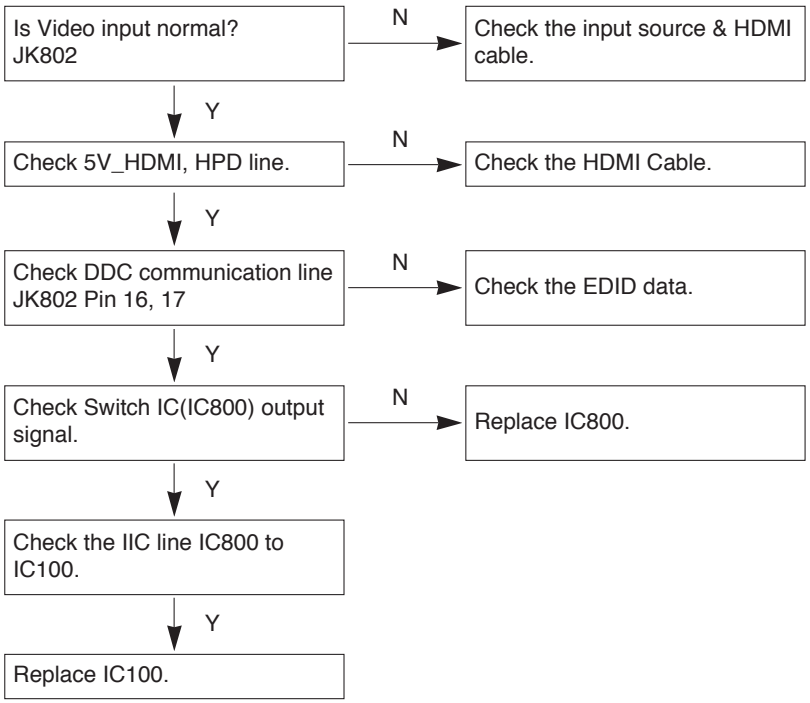
7. HDMI 1/ 2 Video Trouble Shooting guide

- HDMI 1



- HDMI 2



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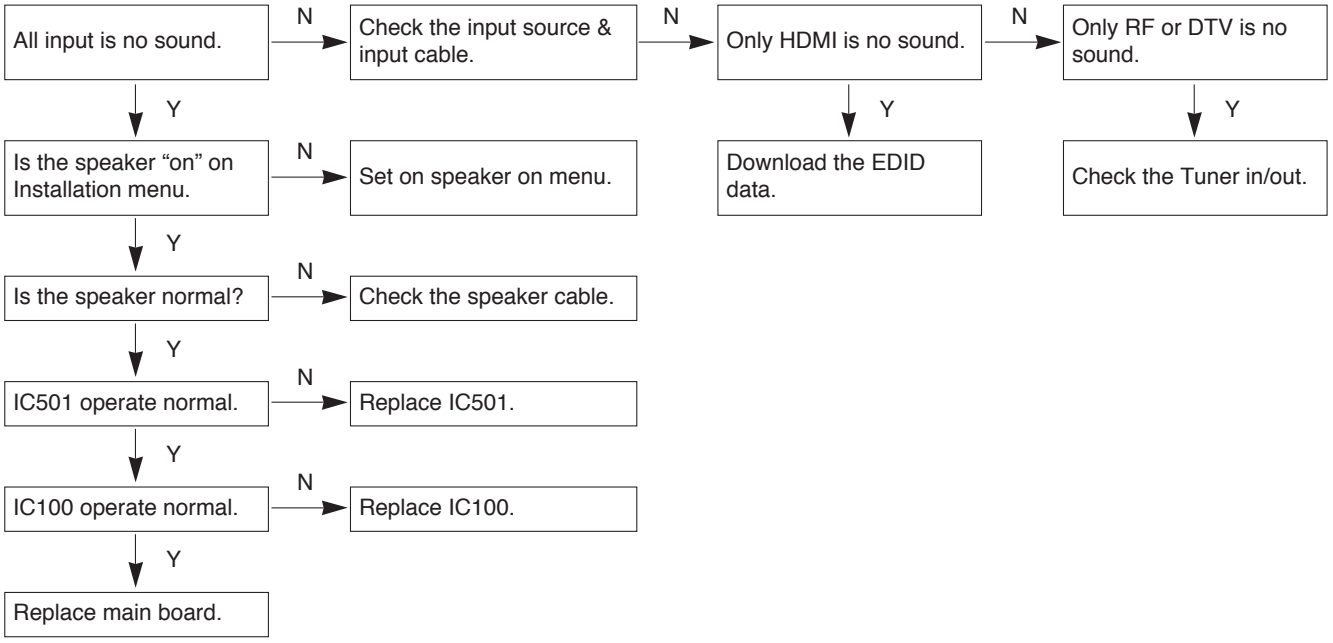
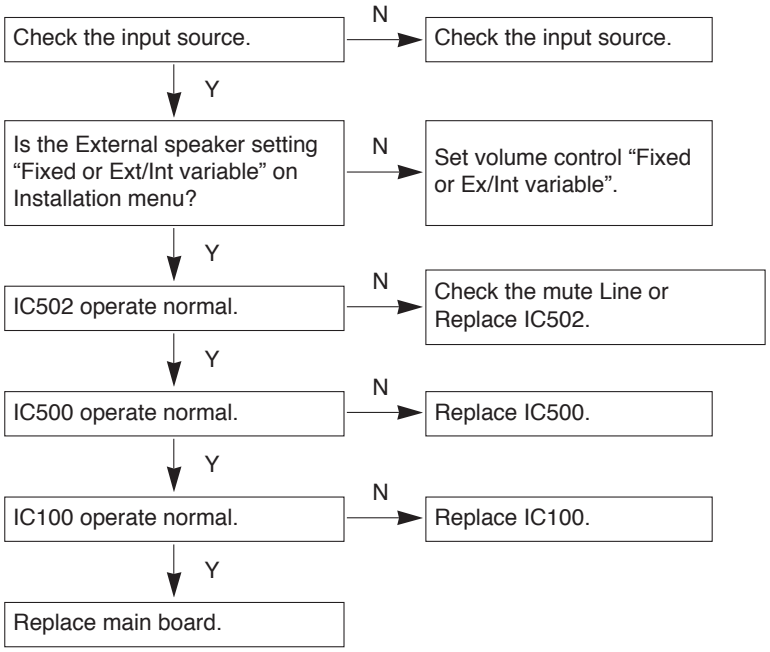
8. Audio Trouble Shooting guide



9. External Speaker out Trouble Shooting guide



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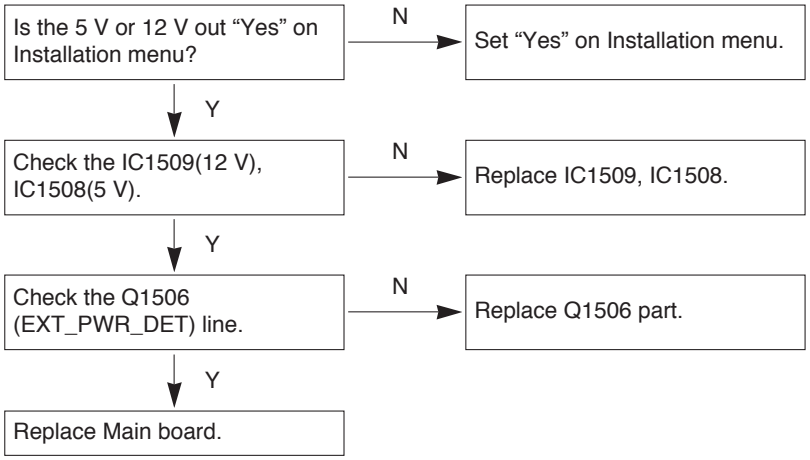
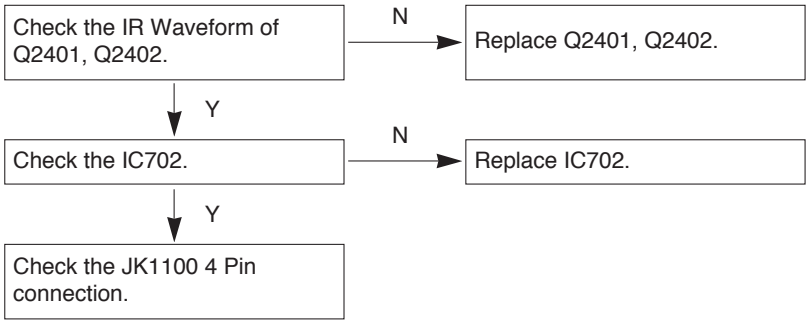
10. RS-232C(DSUB 9P) function Trouble Shooting guide

- Ext Power Out

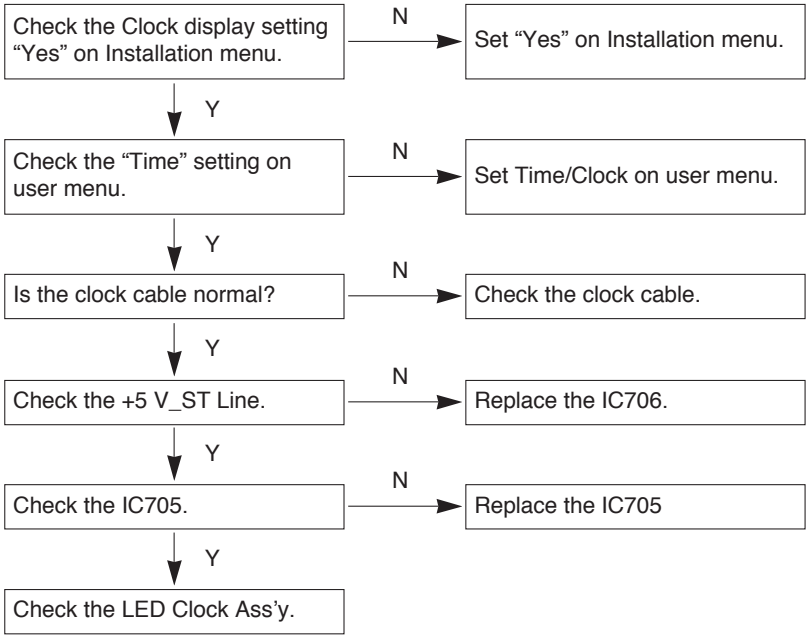


- IR Out



11. Commercial Function Trouble Shooting guide

- Front Clock



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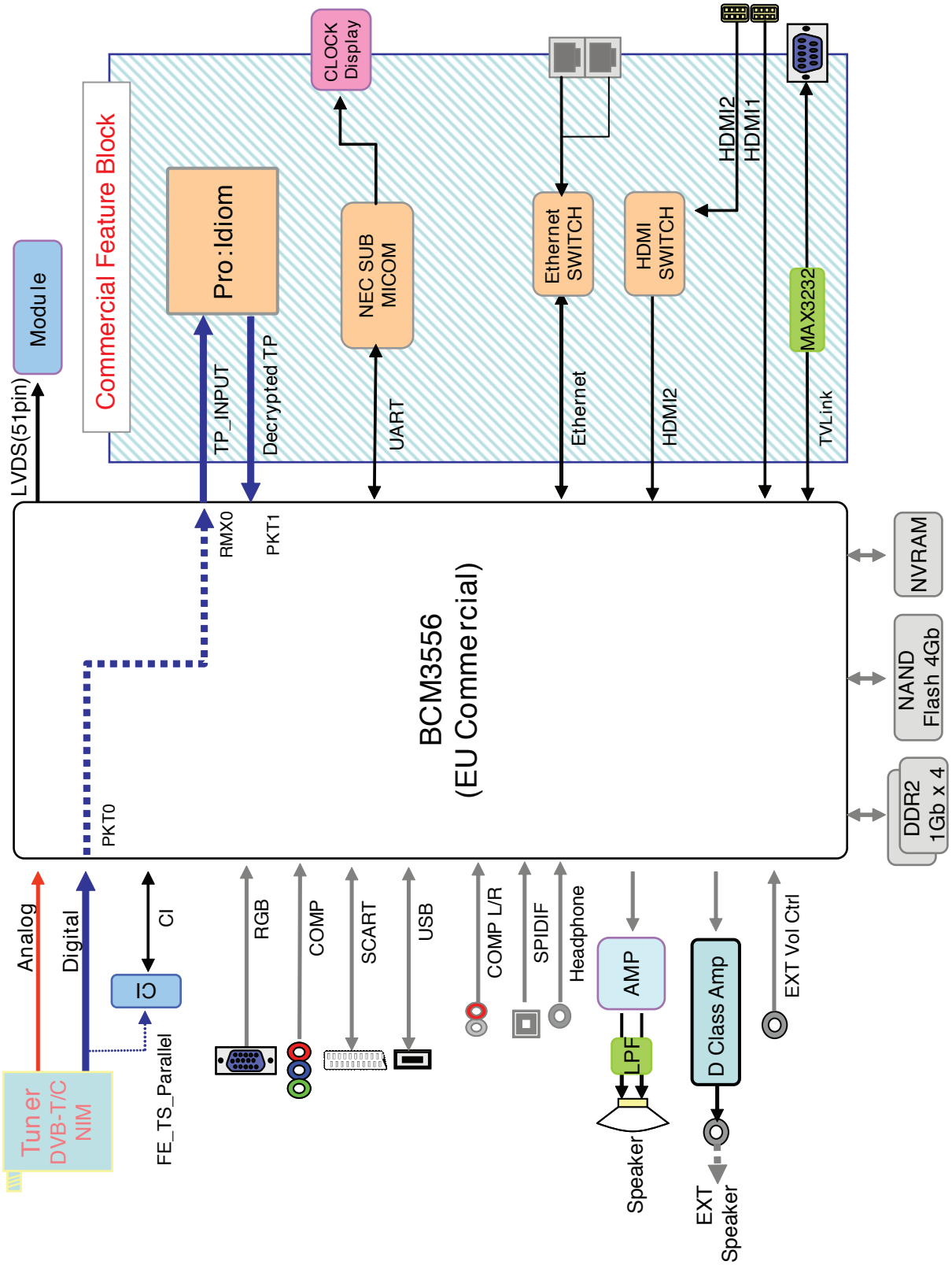
BLOCK DIAGRAM



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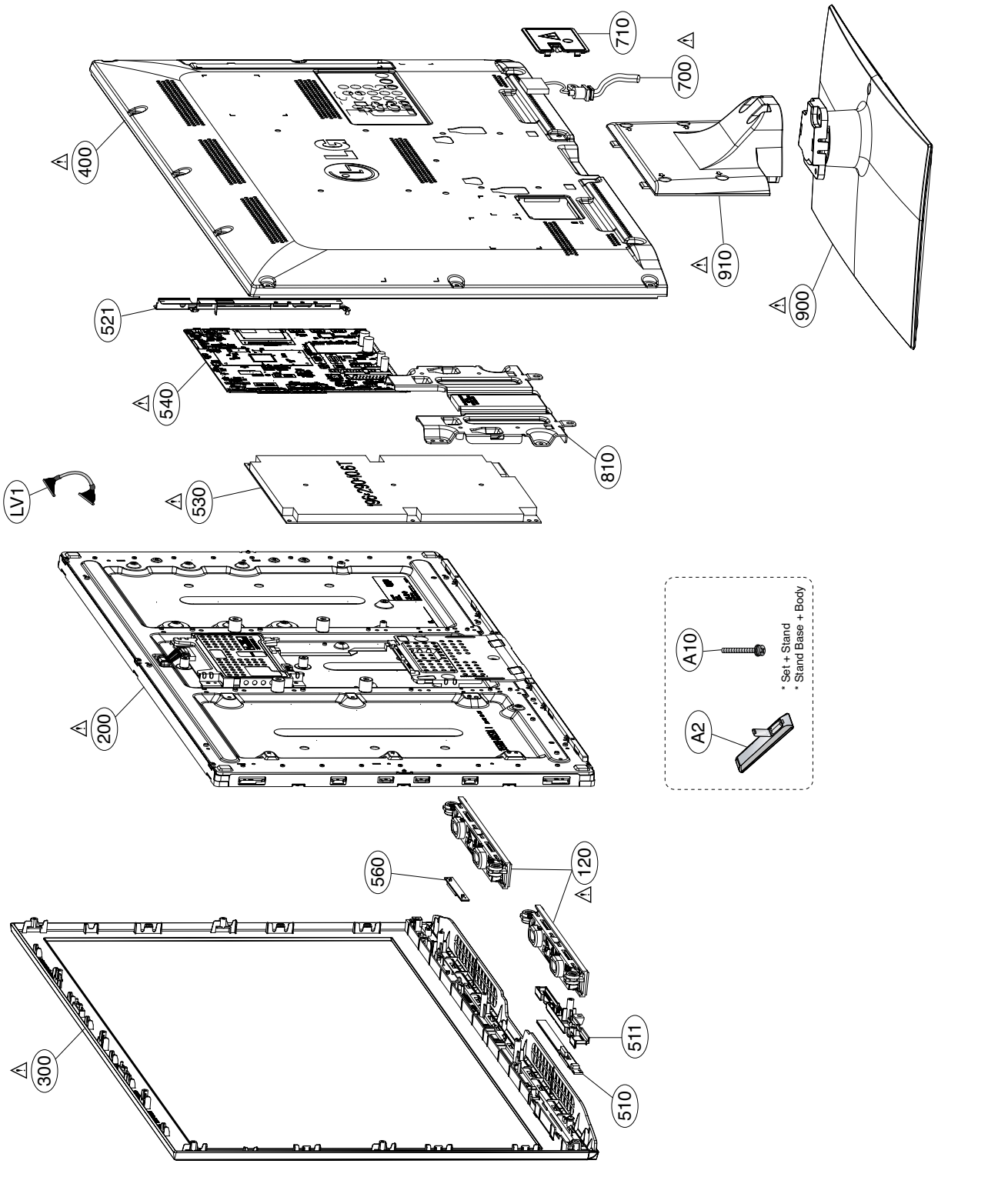
EXPLODED VIEW

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and EXPLODED VIEW.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.



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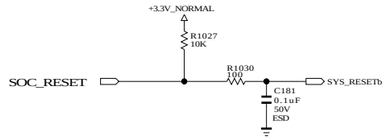
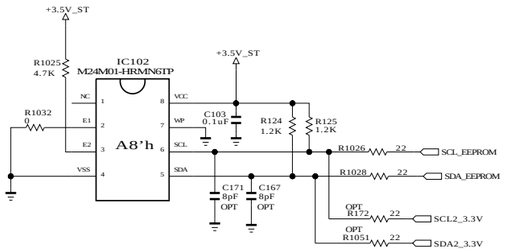
RESET

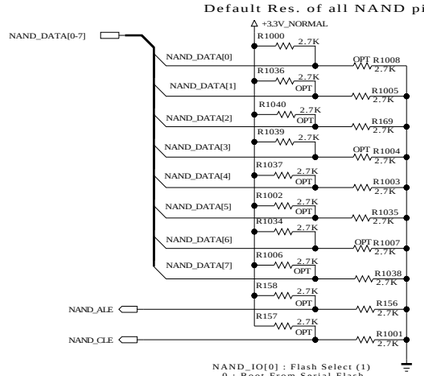


NVRAM



Boot Strap

Default Res. of all NAND pin is Pull-down



NAND_IO[0] : Flash Select (1)
0 : Boot From Serial Flash
1 : Boot From NAND Flash

NAND_IO[1] : NAND Block 0 Write (DNS)
0 : Enable Block 0 Write
1 : Disable Block 0 Write

NAND_IO[3:2] : NAND ECC (1, DNS)
00 : No ECC
01 : 1 ECC Bit
10 : 4 ECC Bit
11 : 8 ECC Bit

NAND_IO[4] : CPU Endian (0)
0 : Little Endian
1 : Big Endian

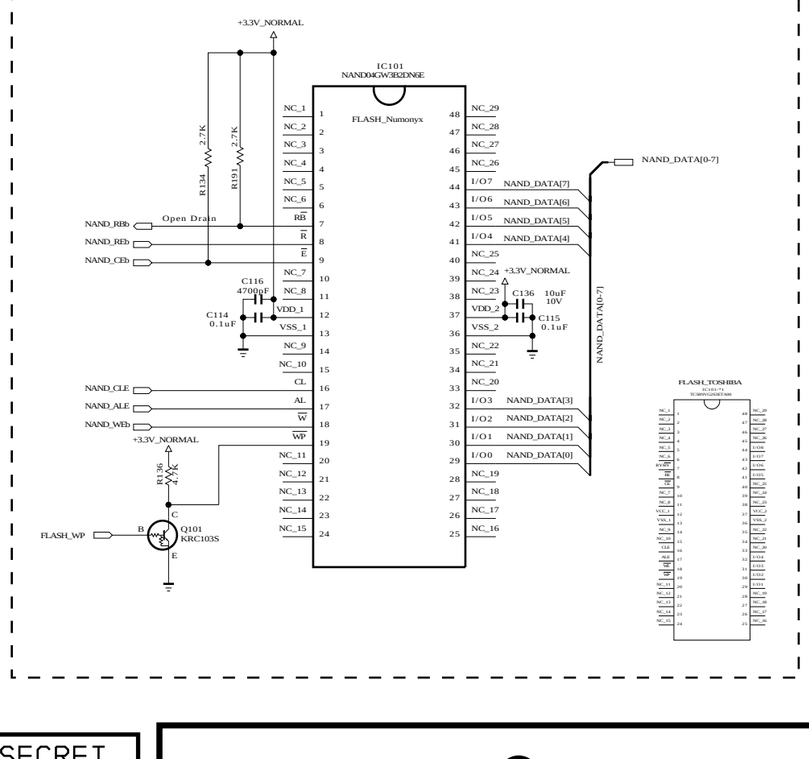
NAND_IO[6:5] : Xtal Bias Control (1, DNS)
00 : 1.2mA (Fundmental Recommand)
01 : 1.8mA
10 : 2.4mA (3rd over tune Recommand)
11 : 3.0mA

NAND_IO[7] : MIPS Frequency (DNS)
0 : 405MHz
1 : 378MHz

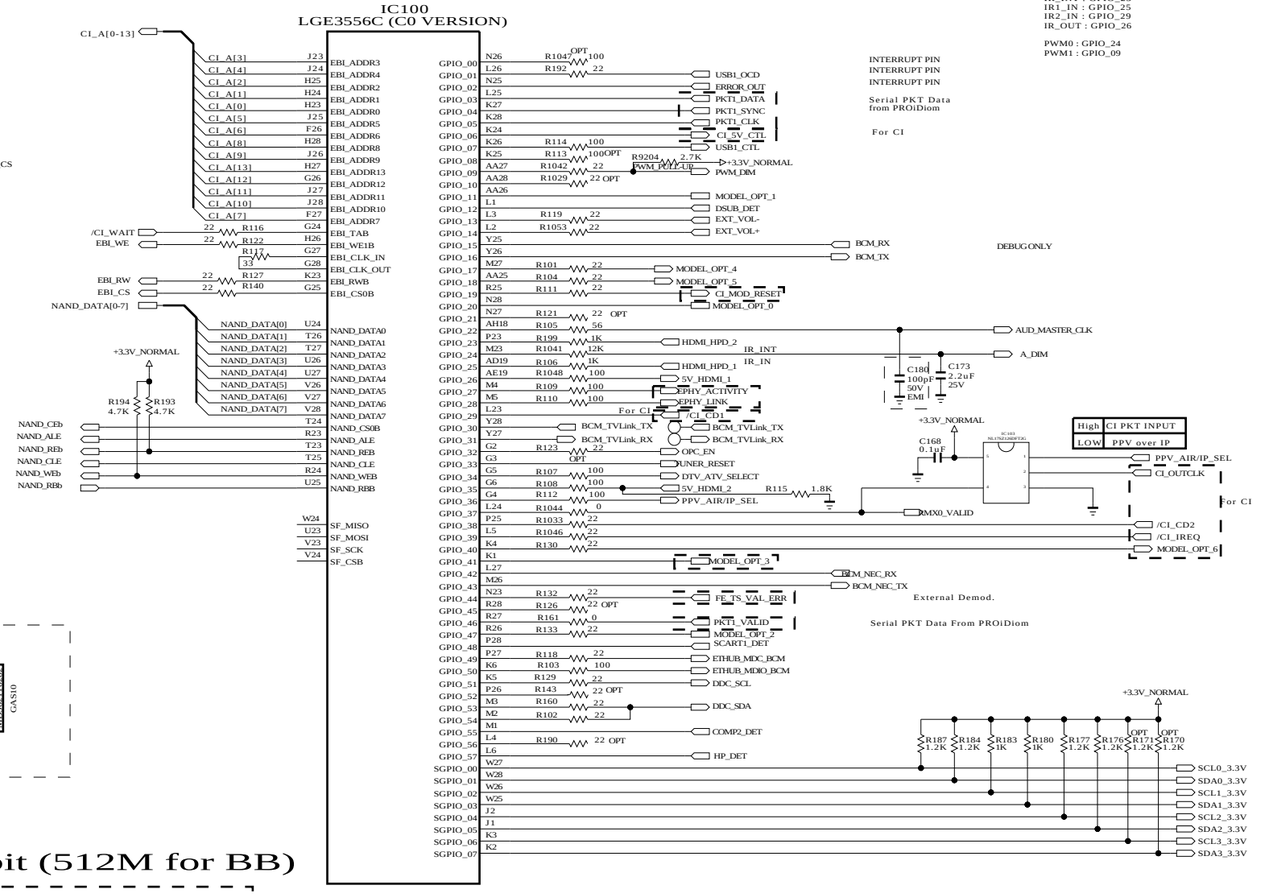
NAND_ALE : I2C Level (DNS)
0 : 3.3V Switching
1 : 5V Switching

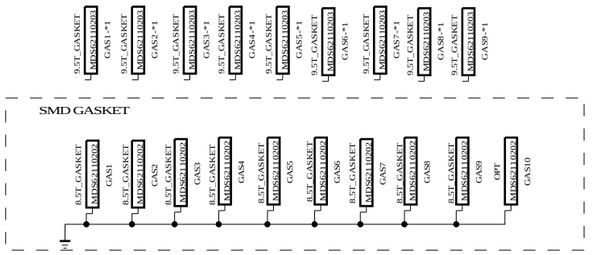
NAND_CLE
0 : Enable D2CDIFF AC (DNS)
1 : Disabe D2CDIFF AC

* NAND FLASH MEMORY 4Gbit (512M for BB)



IC100
LGE3556C (C0 VERSION)



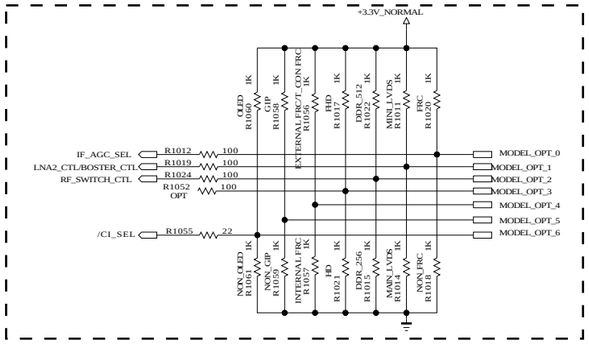


* I2C MAP

* I2C_0 : TUNER
* I2C_1 : AUDIO AMP, NEC(OPT), Pro:Idiom, Intelligent SENSOR
* I2C_2 : HDMI S/W, TUNER D, Ethernet HUB
* I2C_3 : EEPROM

* I2C_0 : TUNER A
* I2C_1 : AUDIO AMP, NEC, URSA(OPT)
* I2C_2 : TUNER D, HDMI S/W, WIRELESS, USB S/W
* I2C_3 : EEPROM, URSA, P-GAMMA DATA D/L, IC9100(P-GAMMA), LVDS(240HZ)

MODEL OPTION



MODEL OPTION

PIN NAME	PIN NO.	HIGH	LOW	
MODEL_OPT_0	N28	URSA3	NON_URSA3	
MODEL_OPT_1	AA26	MAIN_MINI_LVDS	MAIN_LVDS	
MODEL_OPT_2	R26	DDR-512M	DDR-256M	
MODEL_OPT_3	K1	FHD	HD	
MODEL_OPT_4	L25	FRC	NON_FRC	GP2 Option
MODEL_OPT_5	K27	GIP	NON-GIP	GP2 Option
MODEL_OPT_6	K4	OLED	NON_OLED	GP2 Option

GP2 Option
*MODEL_OPT_0 & MODEL_OPT_4
REFER TO THIS OPTION

MODEL_OPT_0	MODEL_OPT_4	
LOW	LOW	NO FRC
HIGH	LOW	URSA3 Internal
HIGH	HIGH	URSA3 External
LOW	HIGH	PWIZ Pannel T-con with LG FRC

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Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	BCM3556 & FLASH	SHEET	1 /

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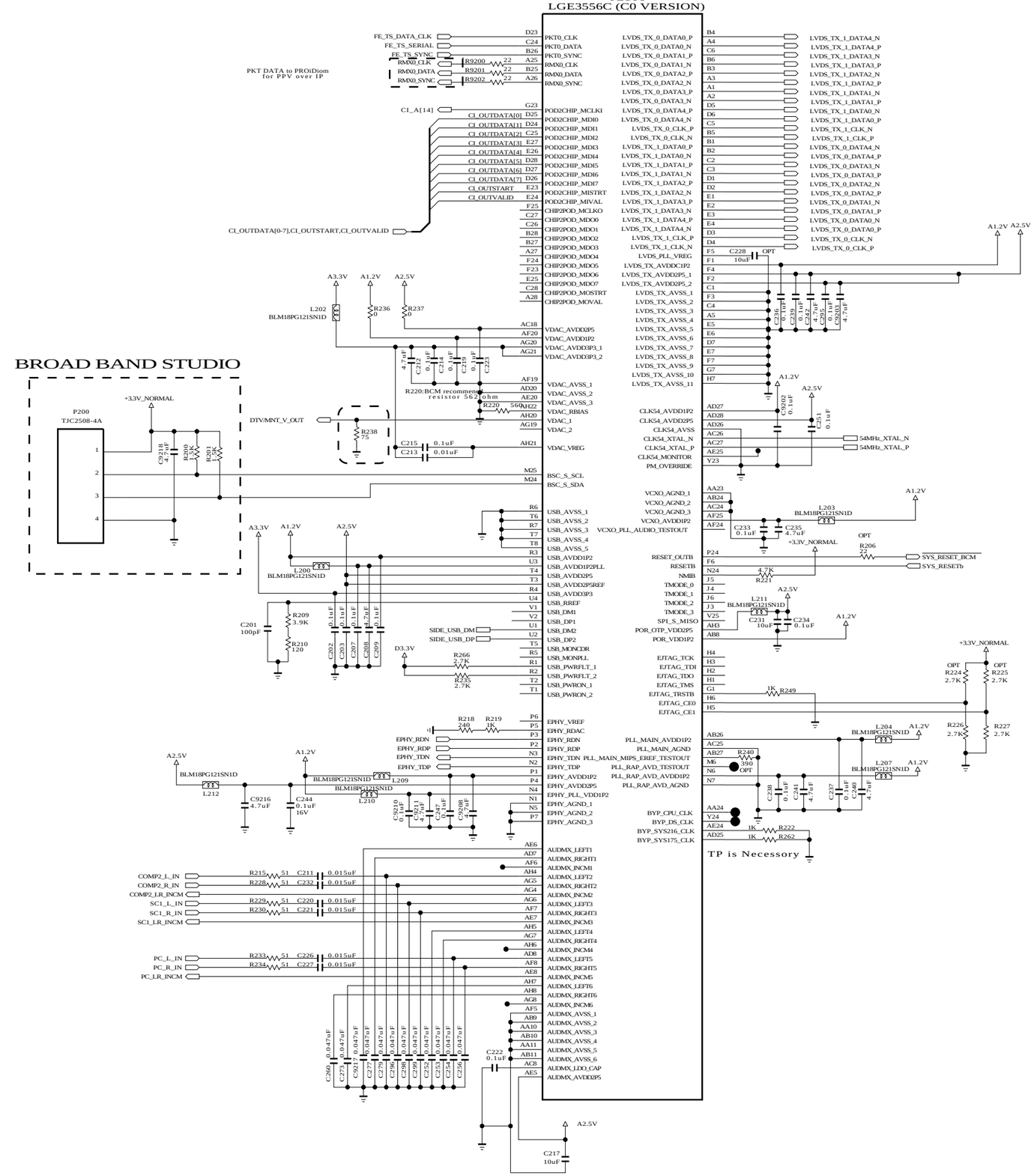
IC100
LGE3556C (C0 VERSION)



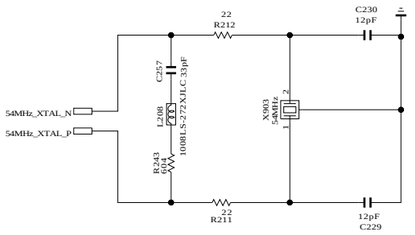
Route INCM between associated left and right signals of same channe

The INCM trace ends at the same point where the connector ground connects to the board ground (thru-hole connector pin).

Place test points, resistors near audio connector. Connect the other side of the resistor to GND as close as possible to the ground connection of the associated audio connector.

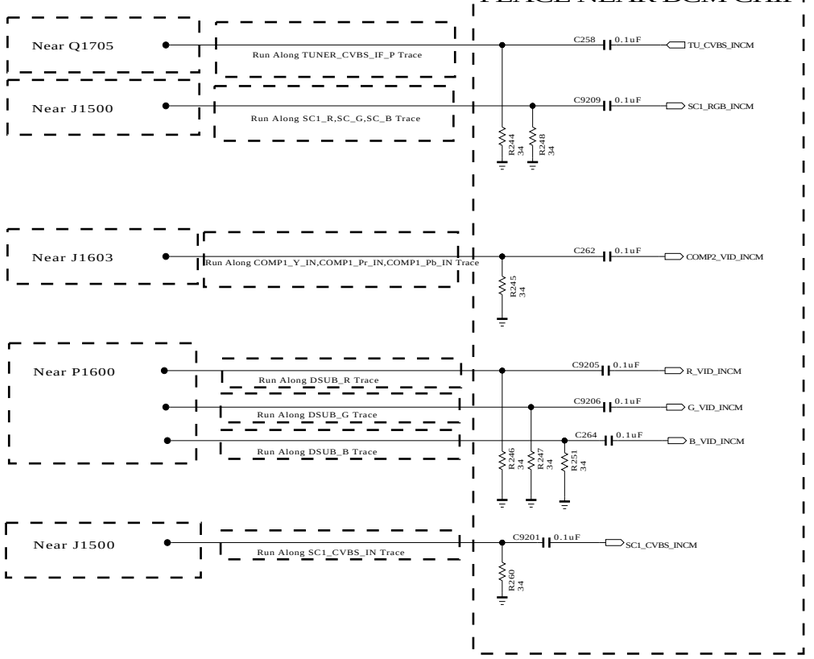
54MHz X-TAL

When usding FUNDMENTAl then series R = 0 ohm and CL = 8 pF
When usding Dip-type X-tal then series R = 22 ohm and CL = 12 pF

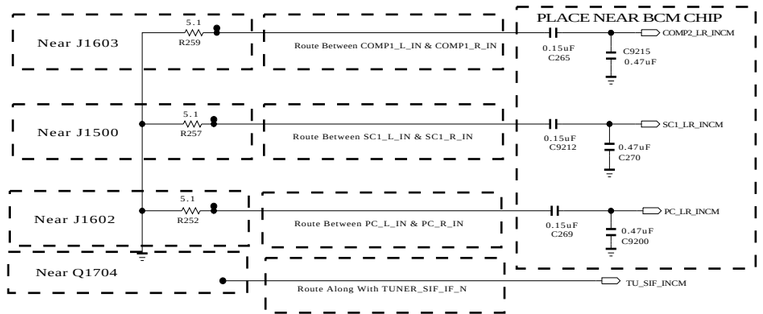


VIDEO INCM

PLACE NEAR BCM CHIP



AUDIO INCM



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Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	BCM3556 & AUD_IN/LVDS	SHEET	2 /

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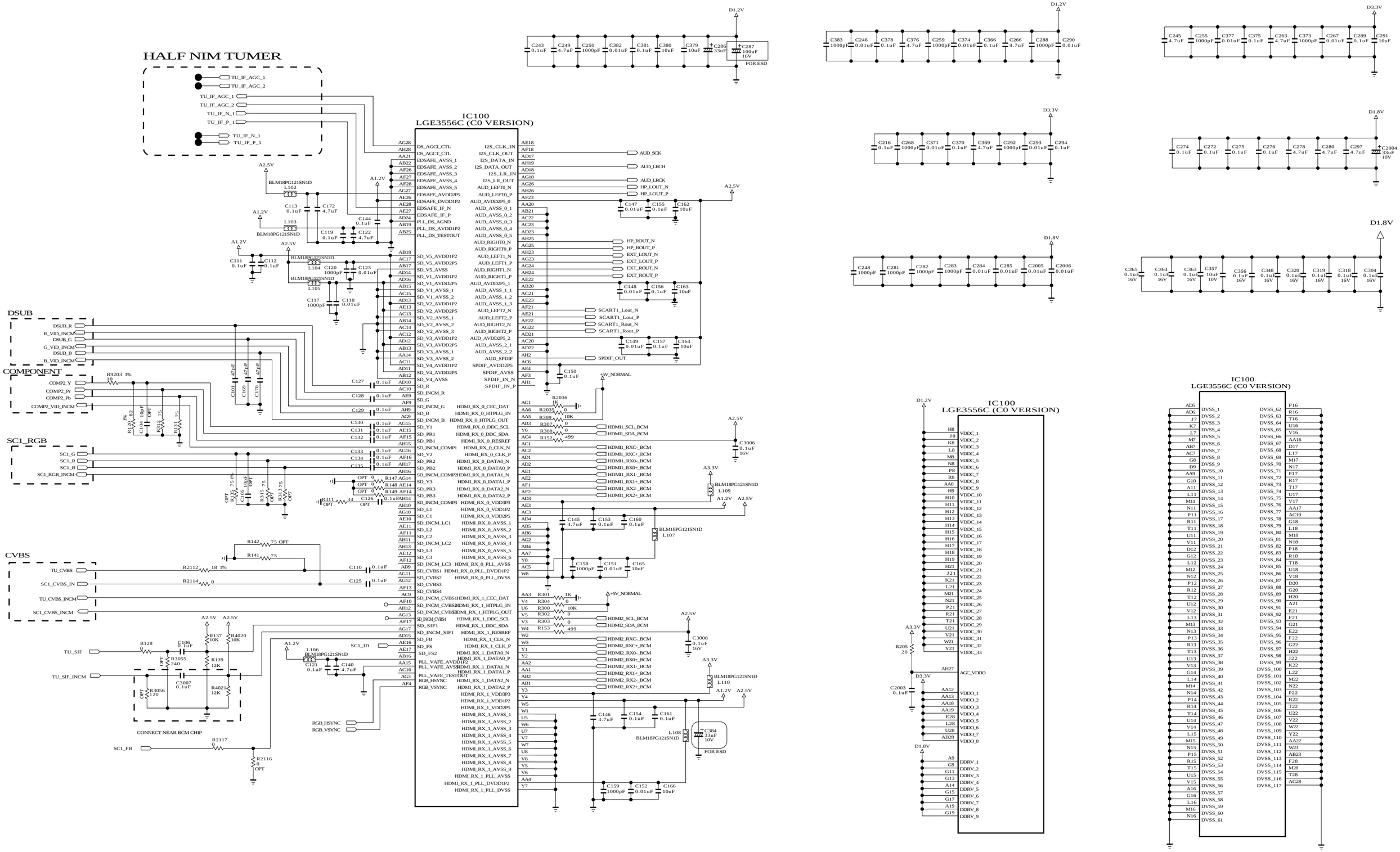

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Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	BCM3556 & VIDEO	SHEET	3 /

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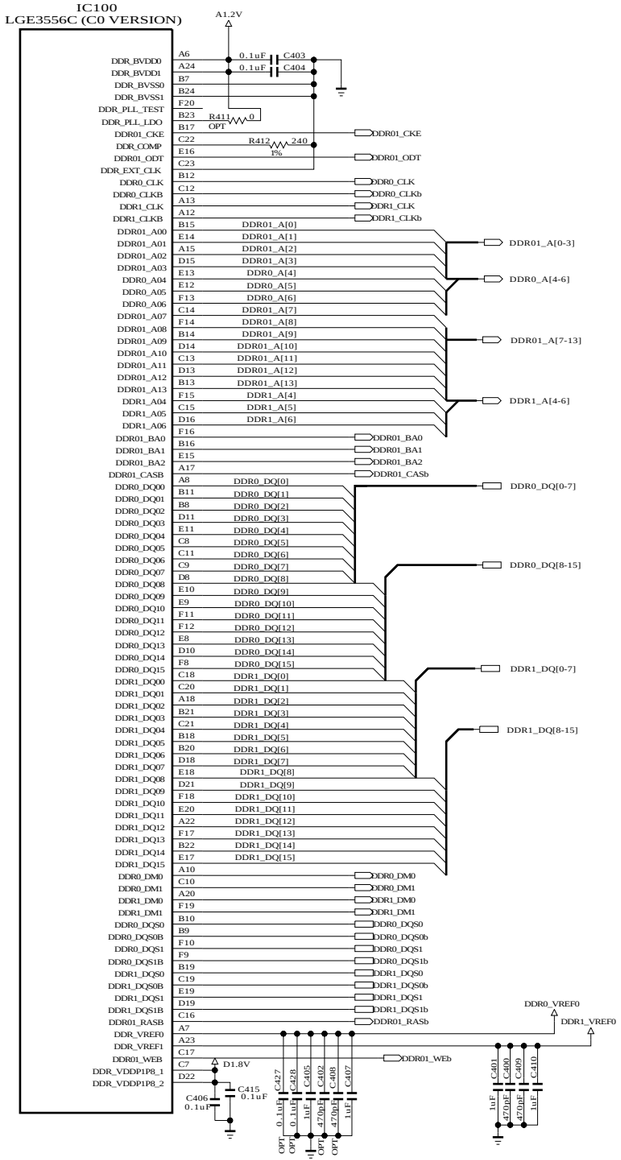

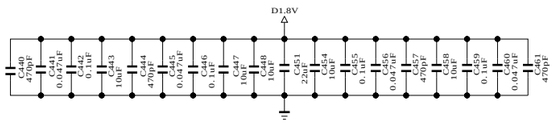

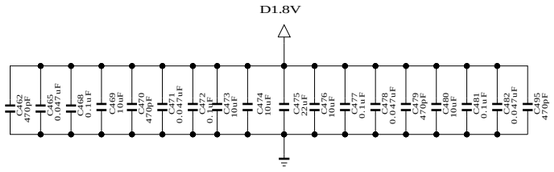

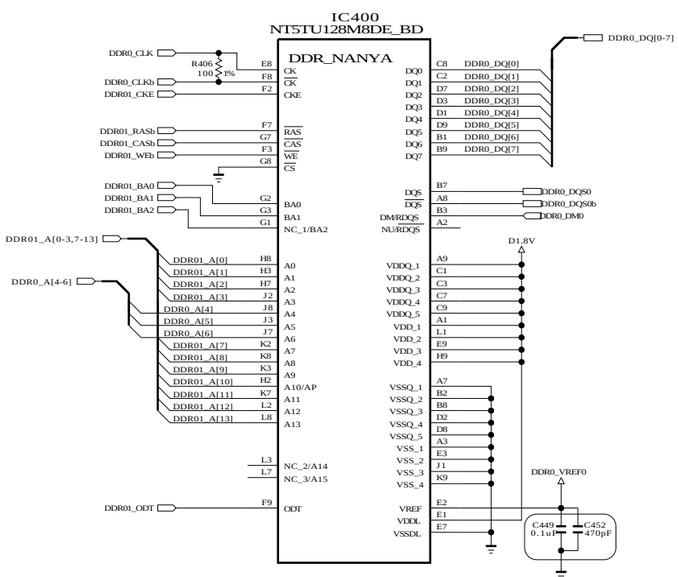

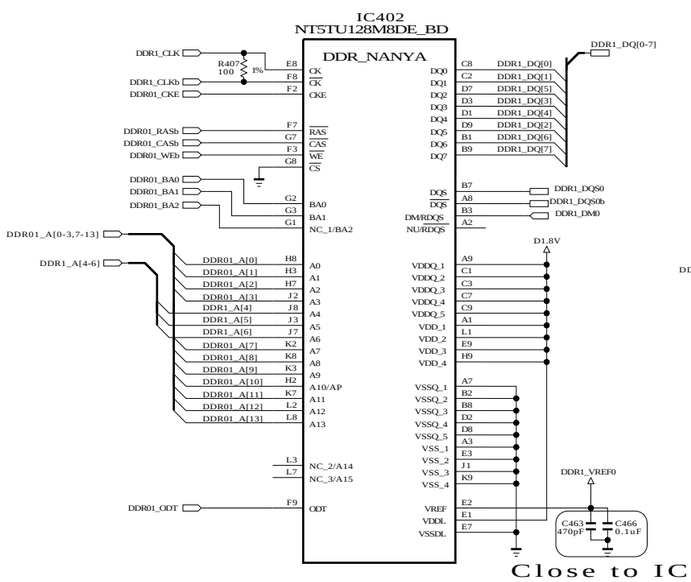

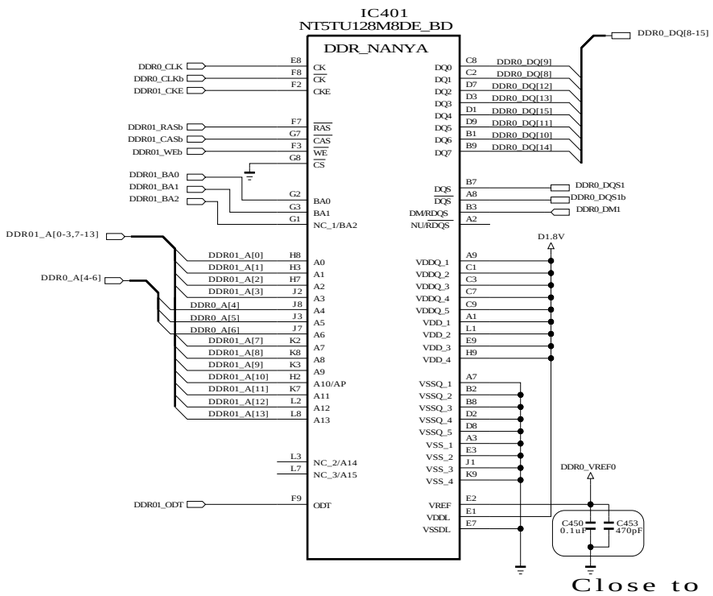

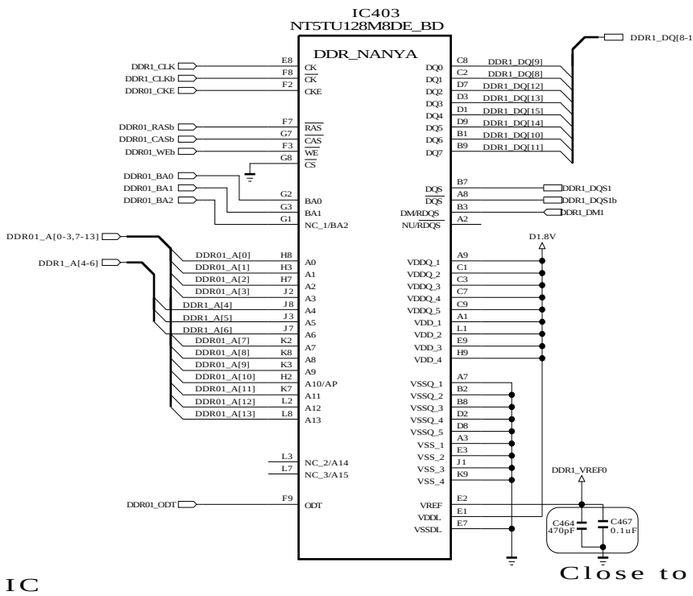

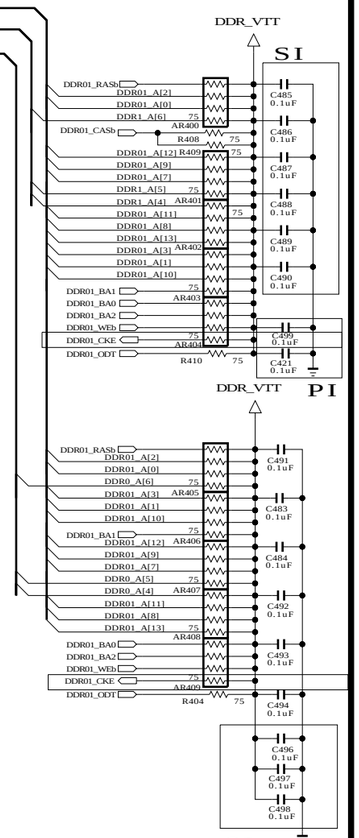

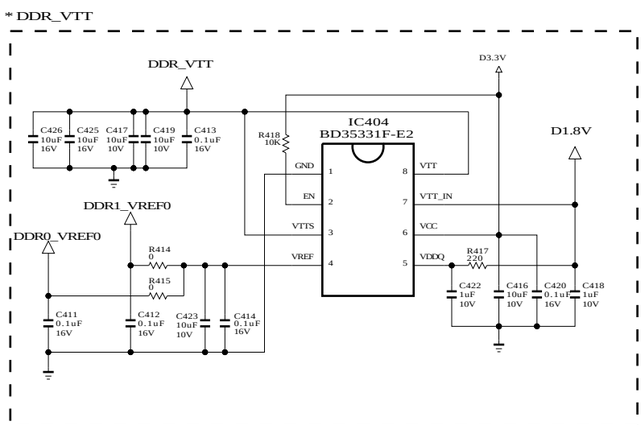

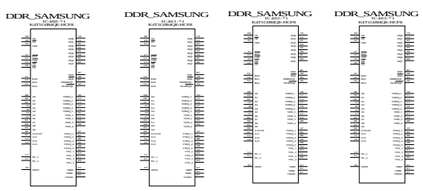

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Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	DDR Memory	SHEET	4 /

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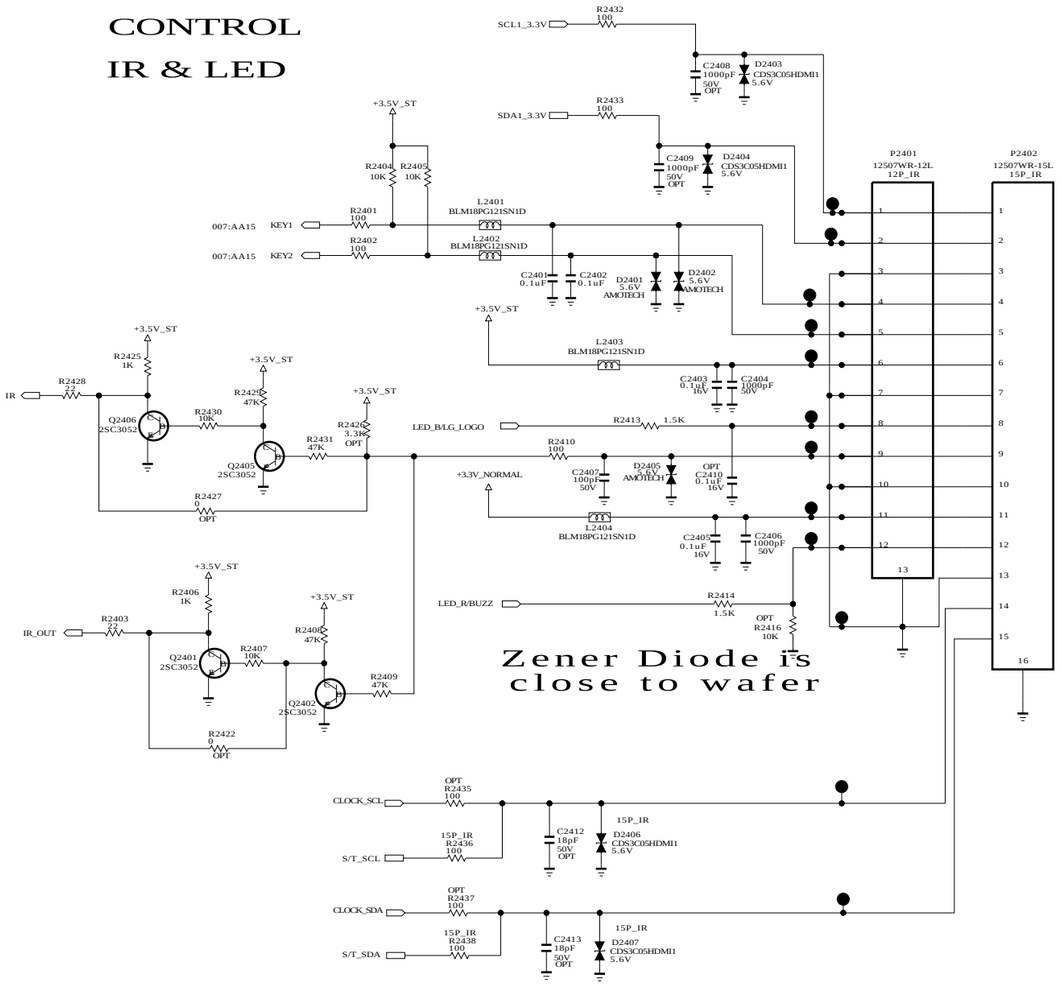
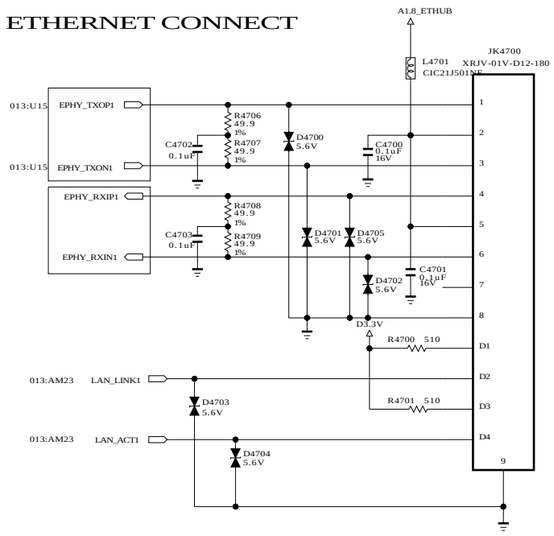
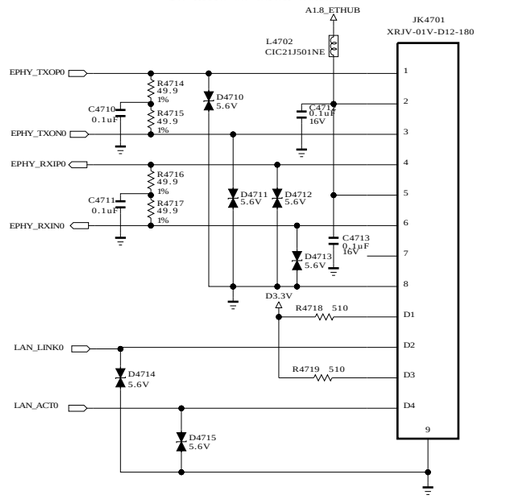
CONTROL
IR & LED



ETHERNET CONNECT



Trace impedance : 100 ohm differenctial impedance to GND plan
5 mils trace width with 7 mils air gap on P/N pair.
Adjacent TX/RX differential pairs should be separated by more th
15 mils to each other



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Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	IR/Ethernet	SHEET	6

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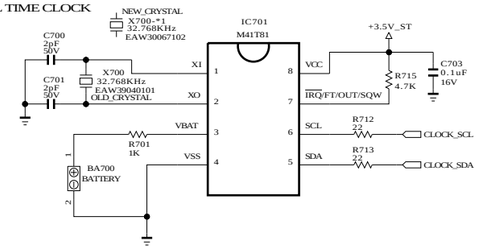
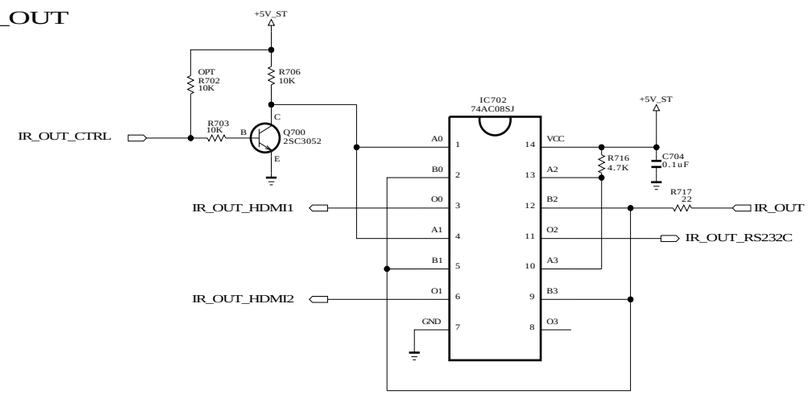
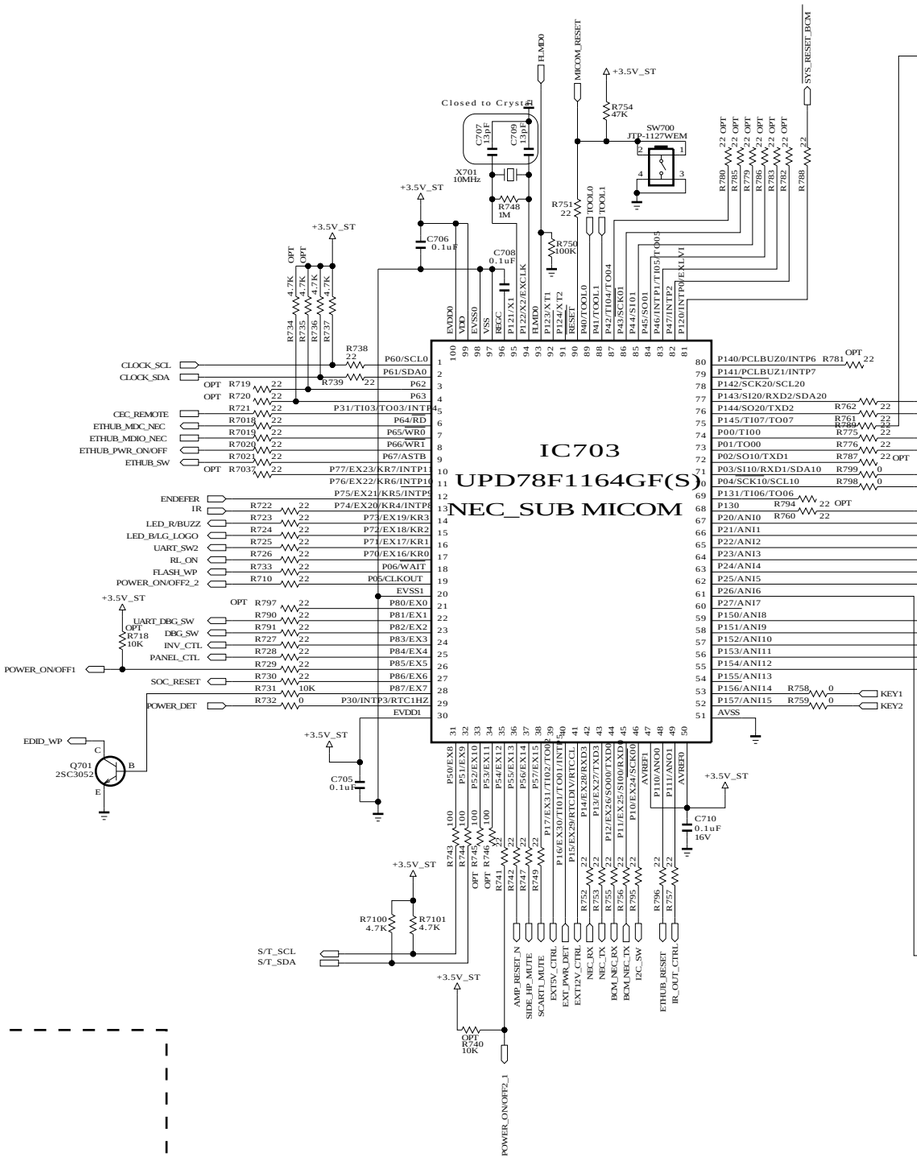
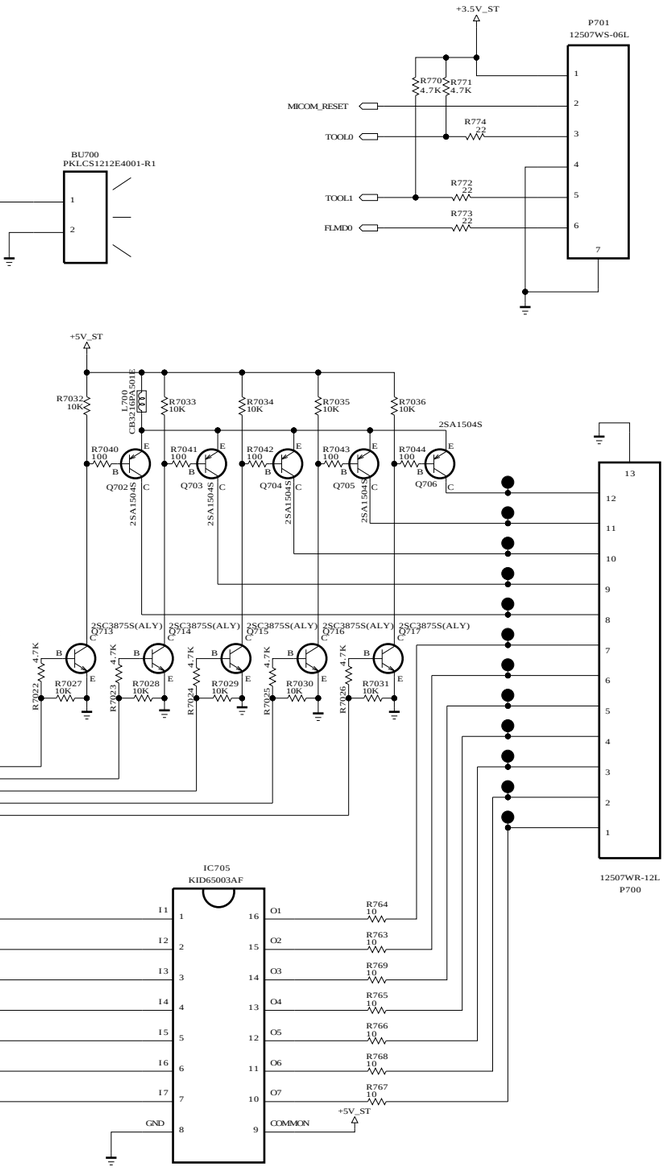
REAL TIME CLOCK



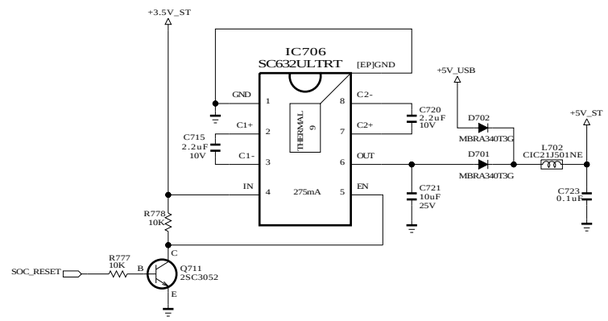
IR_OUT







ST_5V



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Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	NEC MICOM	SHEET	5

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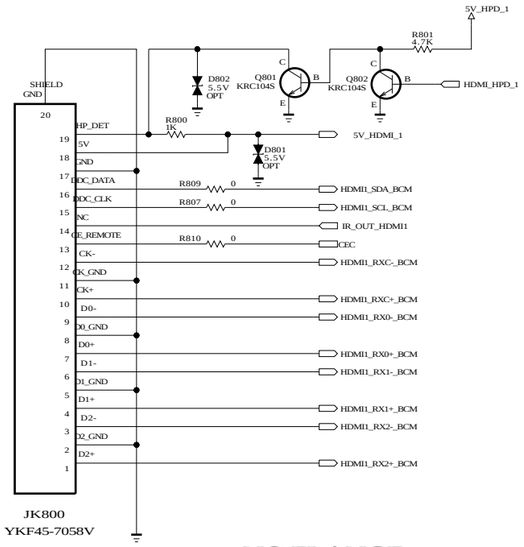
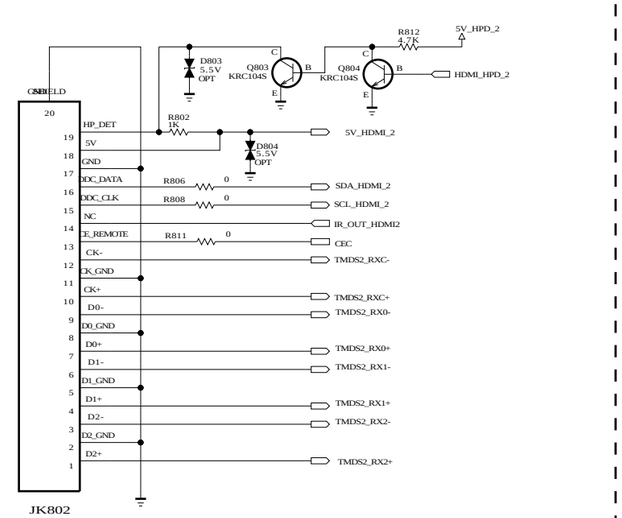
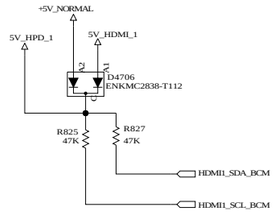
MECHANICAL : HDMI1



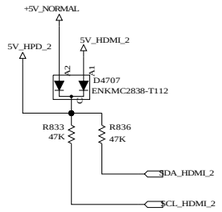
MECHANICAL : HDMI2



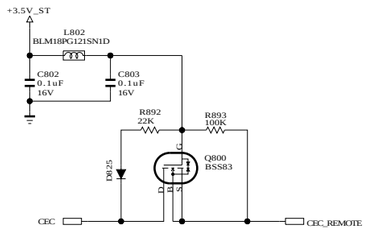
MECHANICAL : HDMI1

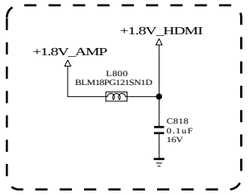


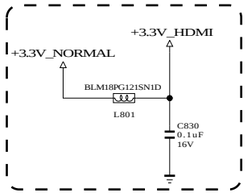
MECHANICAL : HDMI2



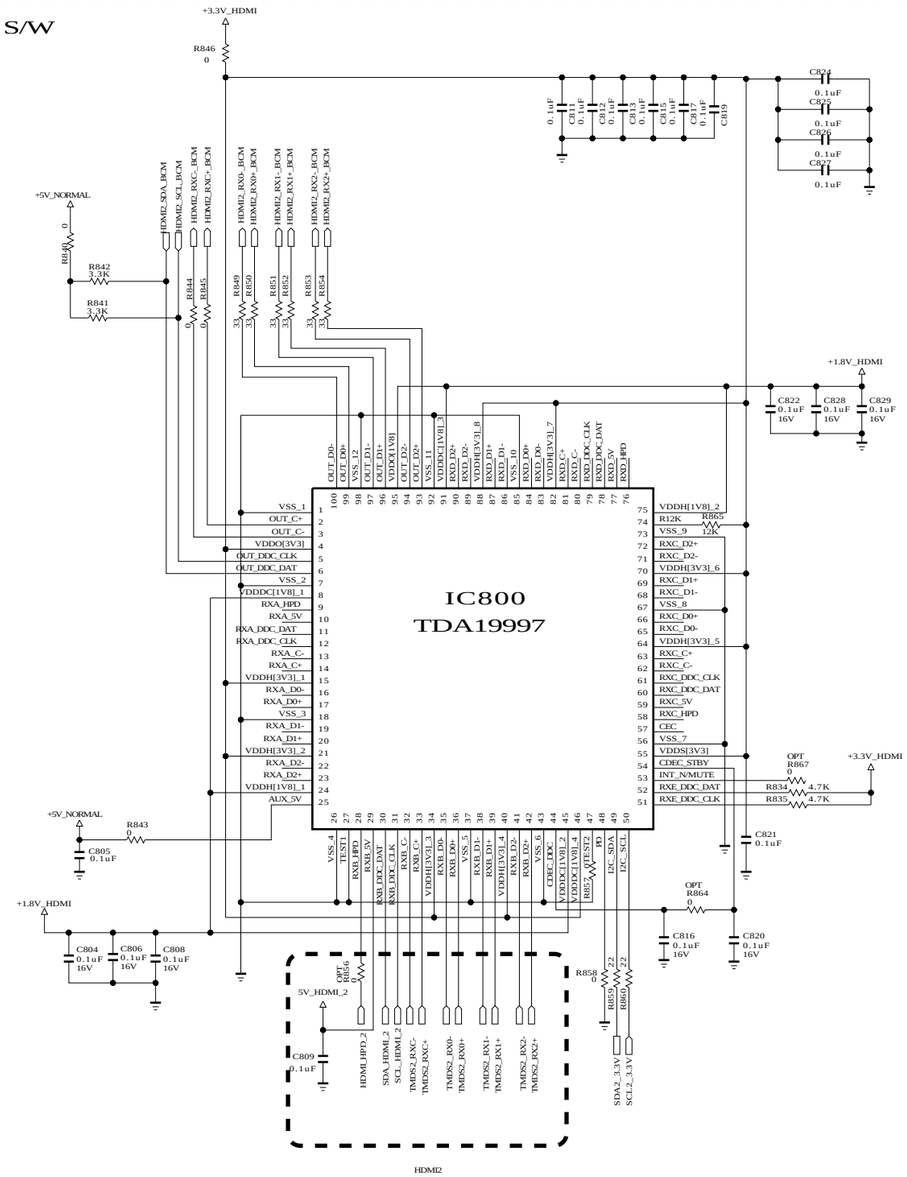
For CEC







HDMI S/W



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Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	HDMI	SHEET	8 /

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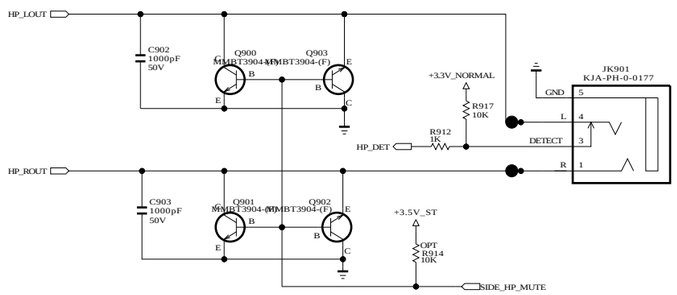
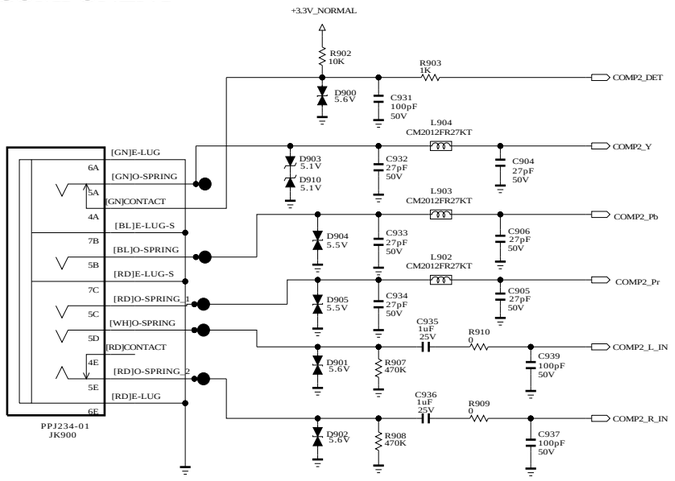
EARPHONE BLOCK

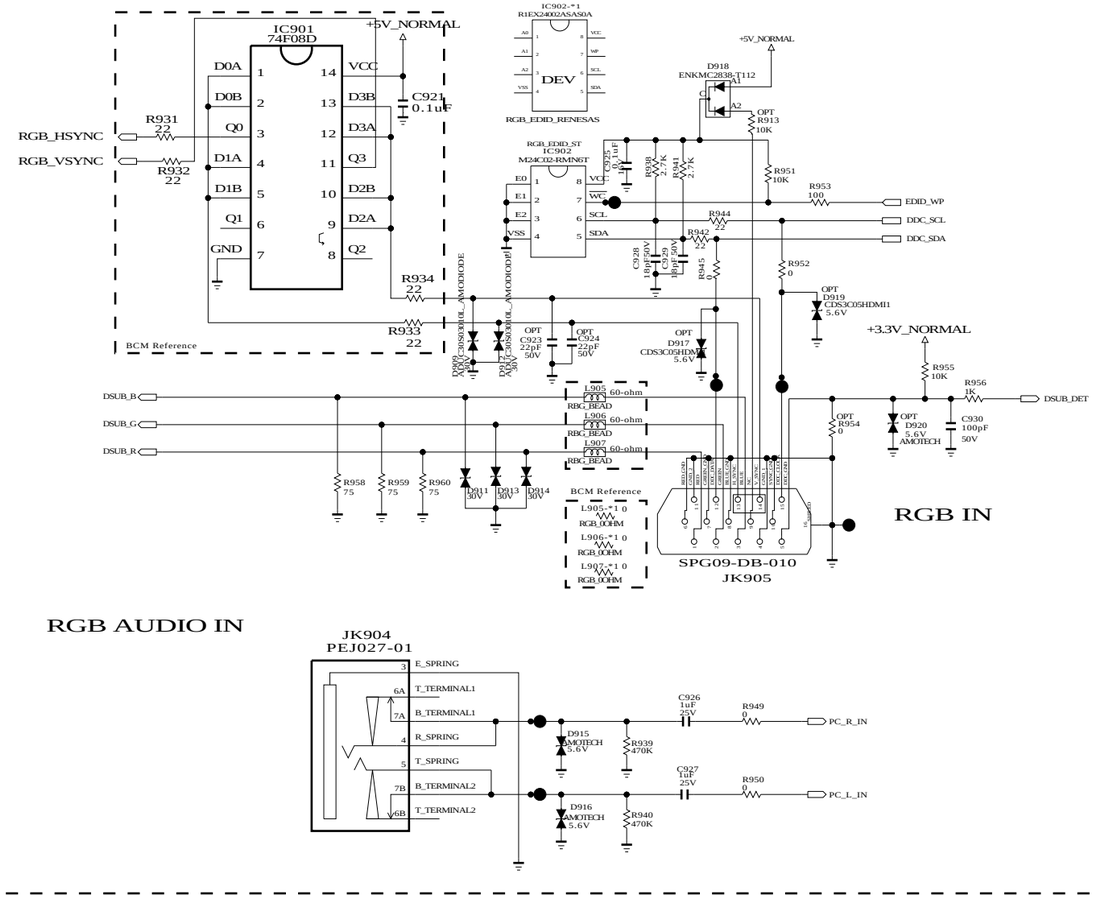
New Item Development



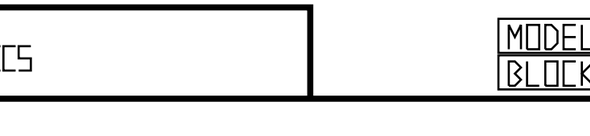
COMPONENT



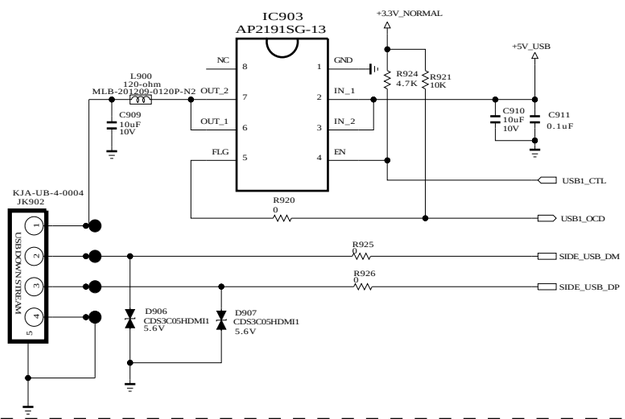
RGB PC



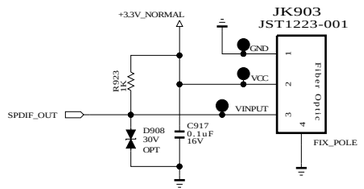
RGB AUDIO IN



USB / DVR Ready



SPDIF OPTIC JACK



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LG ELECTRONICS

Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	AV Interface	SHEET	9 /

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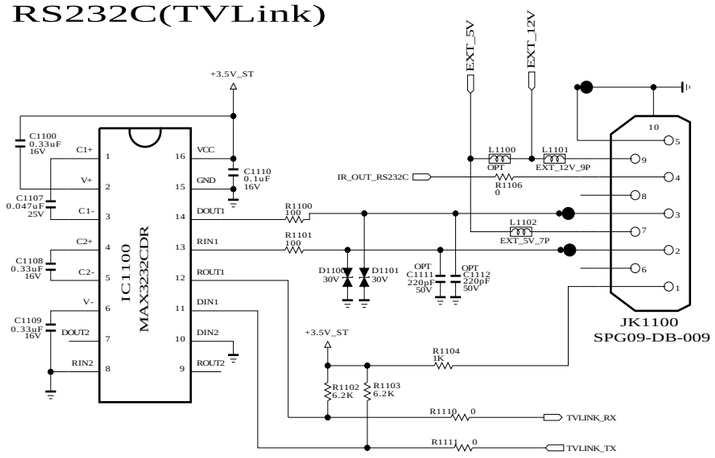
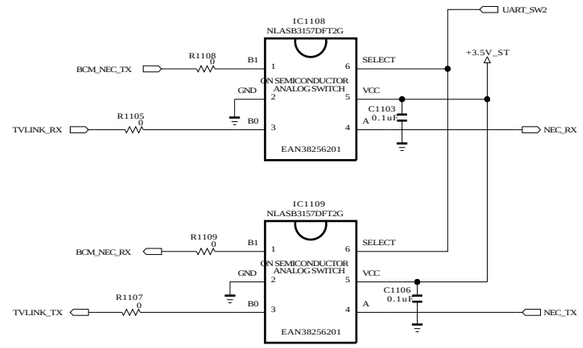
RS232C(TVLink)



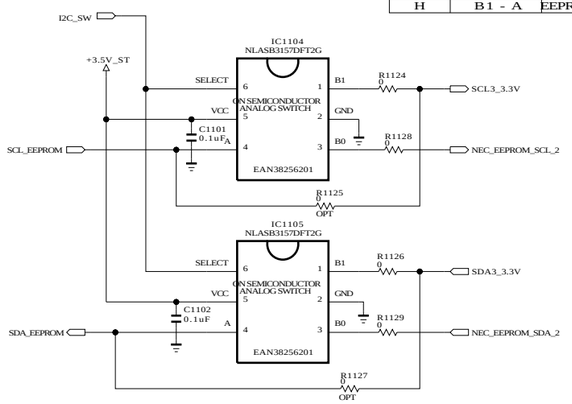
EXT UART SWITCH

SELECT	CONNECTION	
L	B0 - A	Interactive
H	B1 - A	USB Download



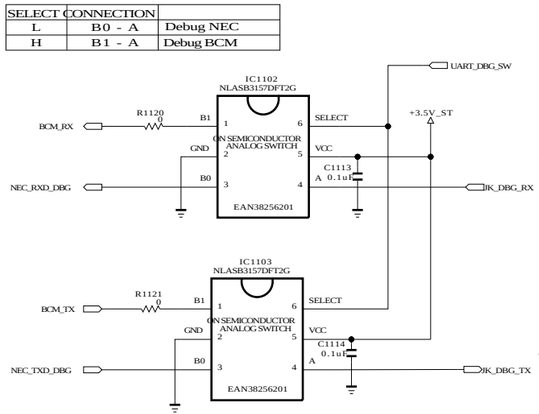
EEPROM I2C SWITCH

SELECT	CONNECTION	
L	B0 - A	EEPROM - NEC
H	B1 - A	EEPROM - BCM



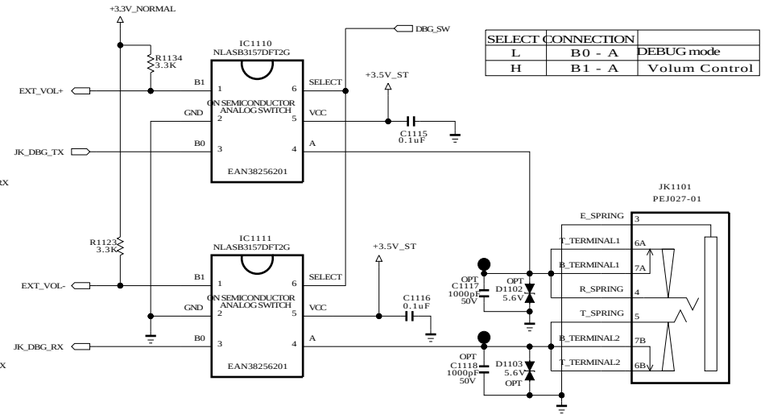
UART DBG SWITCH

SELECT	CONNECTION	
L	B0 - A	Debug NEC
H	B1 - A	Debug BCM



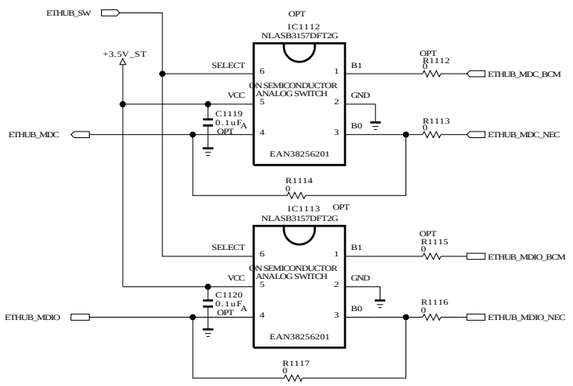
EXT_SPK_CONTROL & DBG OUT

SELECT	CONNECTION	
L	B0 - A	DEBUG mode
H	B1 - A	Volum Control



Ethernet_HUB EEPROM Switch

SELECT	CONNECTION	
L	B0 - A	RTL8306 - NEC
H	B1 - A	RTL8306 - BCM



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Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	UART&Switch	SHEET	11 /

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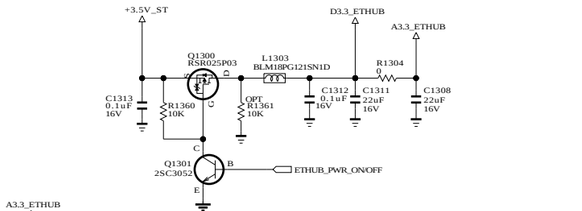
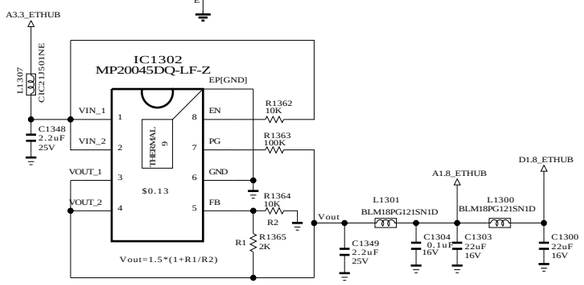
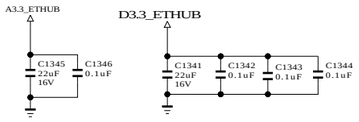
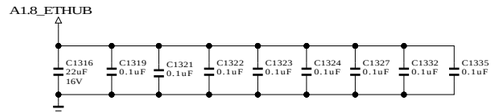
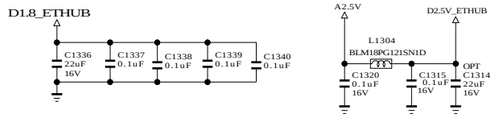
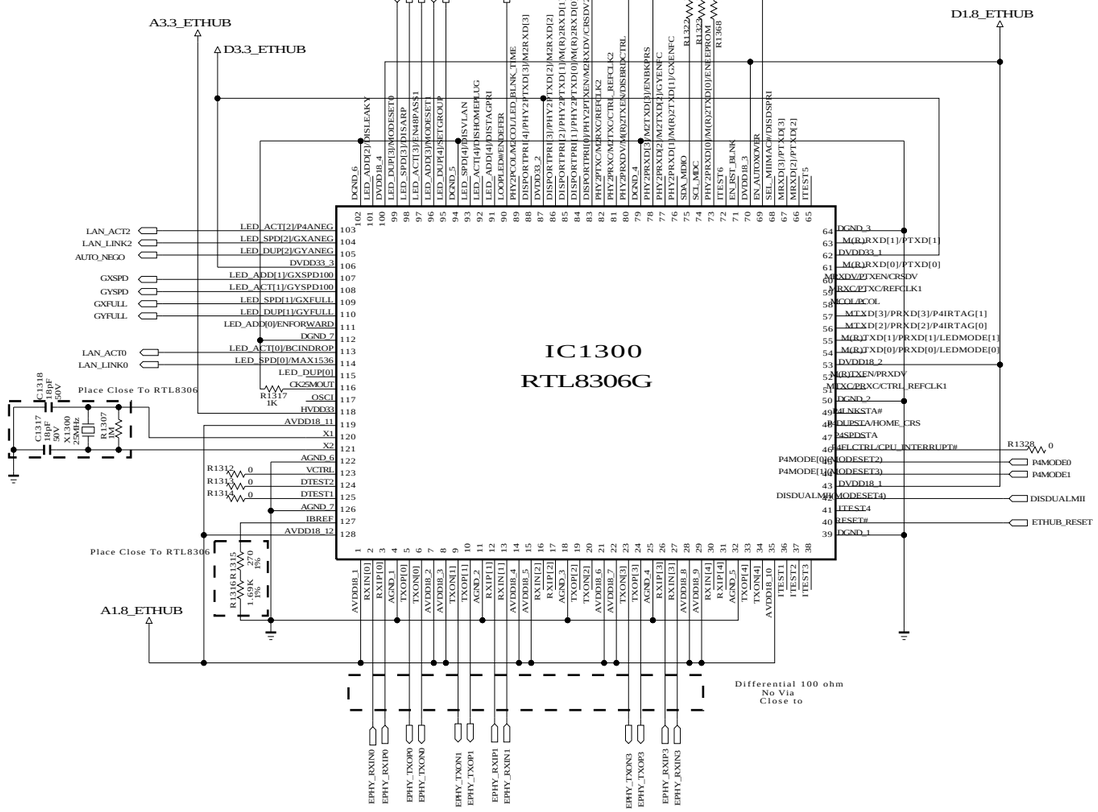




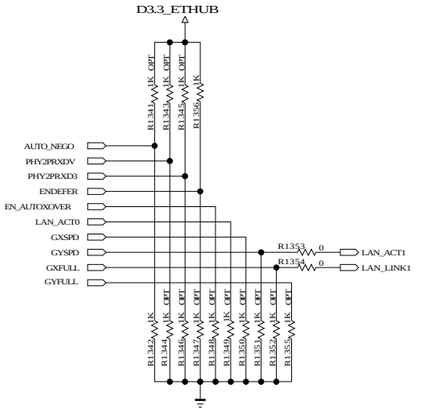




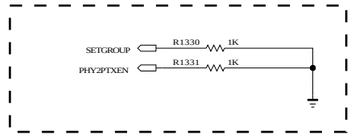




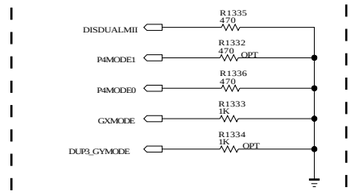
STRAPPING PIN CONFIG

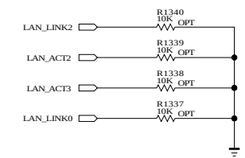


PHY2PRXDV : Broadcast strom control enable/disable
PHY2PRXD3 : Backpressure enable/disable
ENDEFER : Defer enable/disable
EN_AUTOXOVER : Auto cross over enable/disable

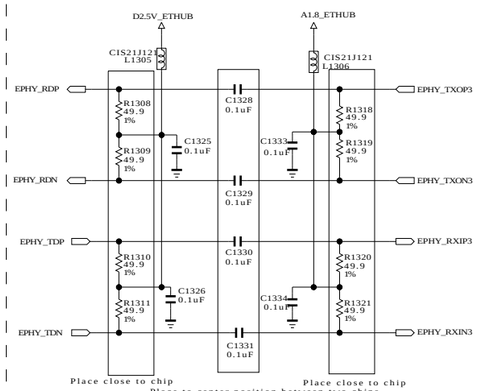


CONFIG FOR MAC5

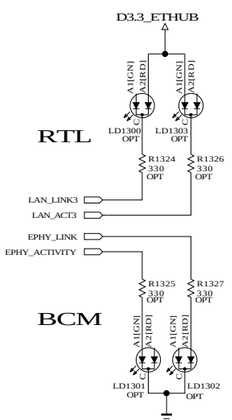


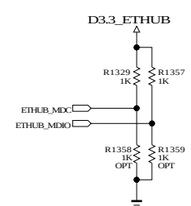


BCM TO RTL matching



FOR DEBUG





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LG ELECTRONICS

Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	ETHERNET HUB	SHEET	13 /

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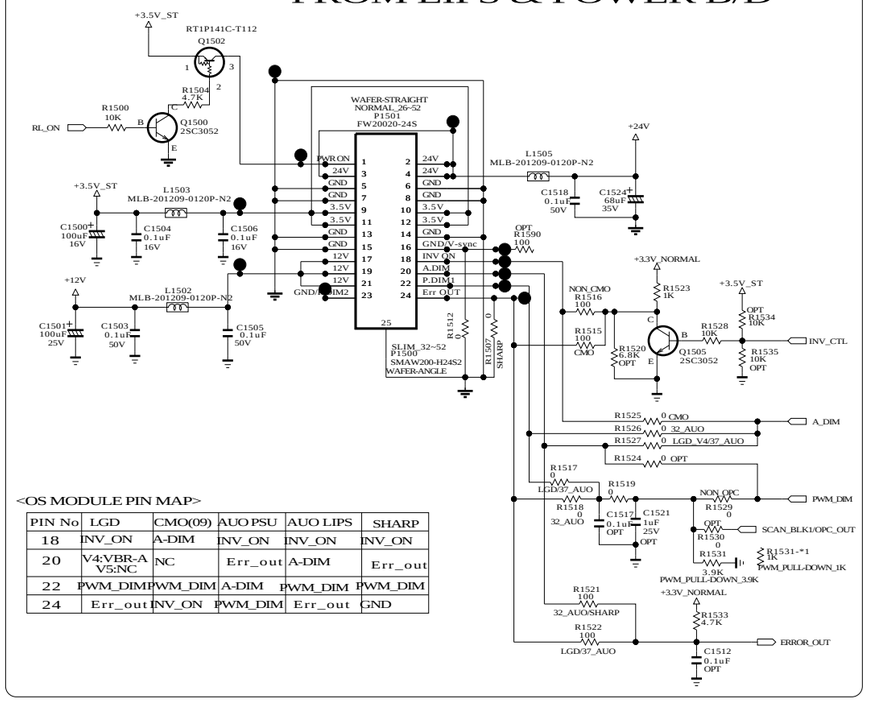
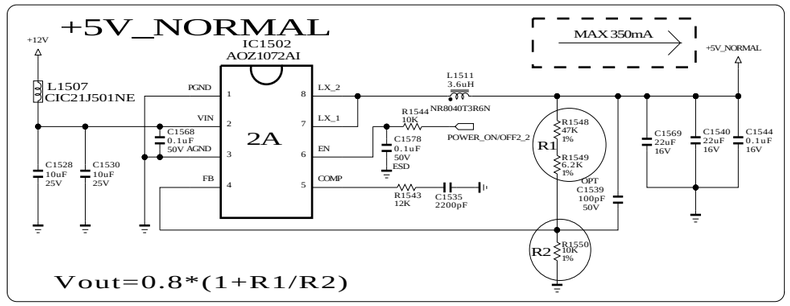
FROM LIPS & POWER B/D



<OS MODULE PIN MAP>

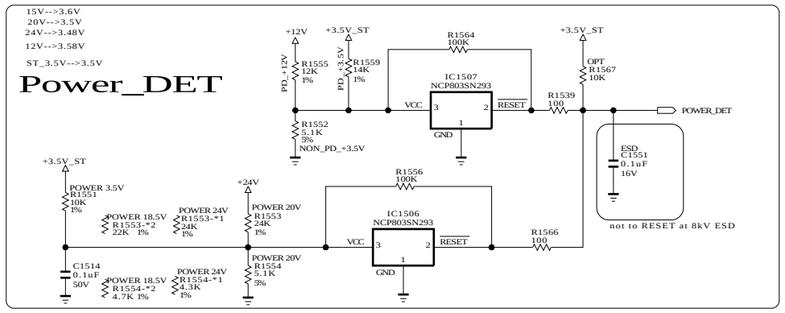
PIN No	LGD	CMO(09)	AUO PSU	AUO LIPS	SHARP
18	INV_ON	A-DIM	INV_ON	INV_ON	INV_ON
20	V4:VBR-A V5:NC	NC	Err_out	A-DIM	Err_out
22	PWM_DIM	PWM_DIM	A-DIM	PWM_DIM	PWM_DIM
24	Err_out	INV_ON	PWM_DIM	Err_out	GND

+5V_NORMAL

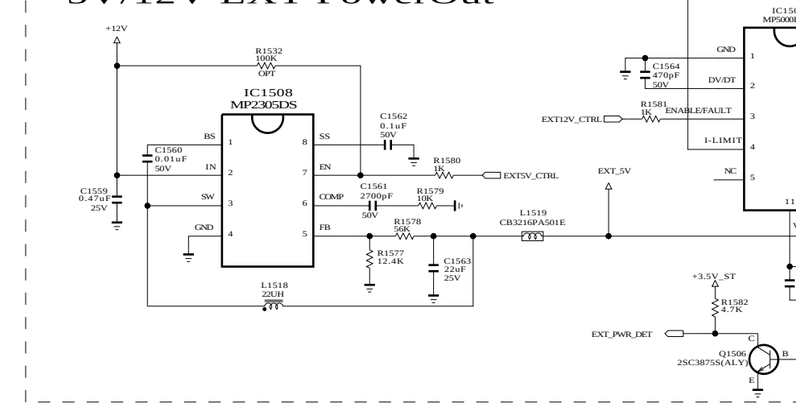


Vout=0.8*(1+R1/R2)

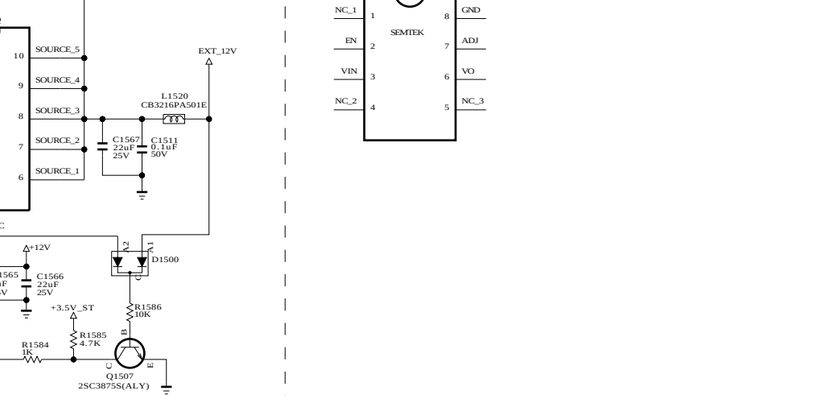
Power_DET



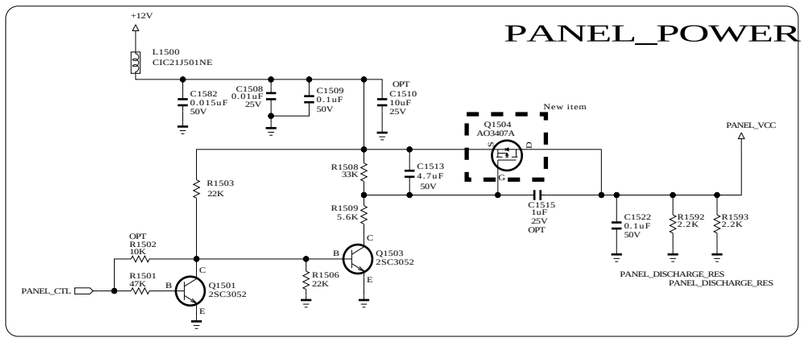
BCM core 1.26V volt



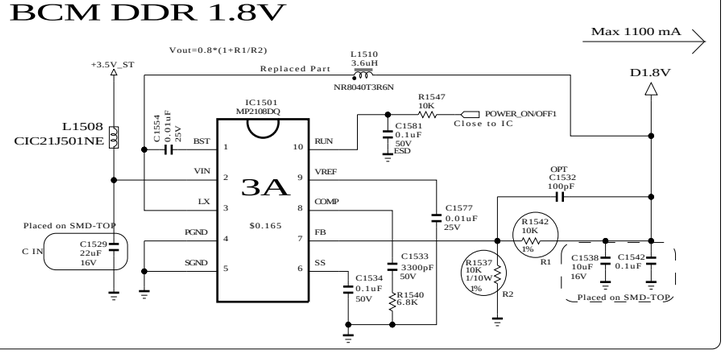
+3.3V_NORMAL



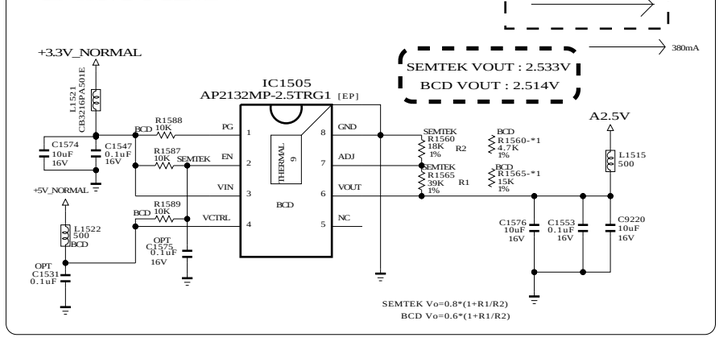
PANEL_POWER



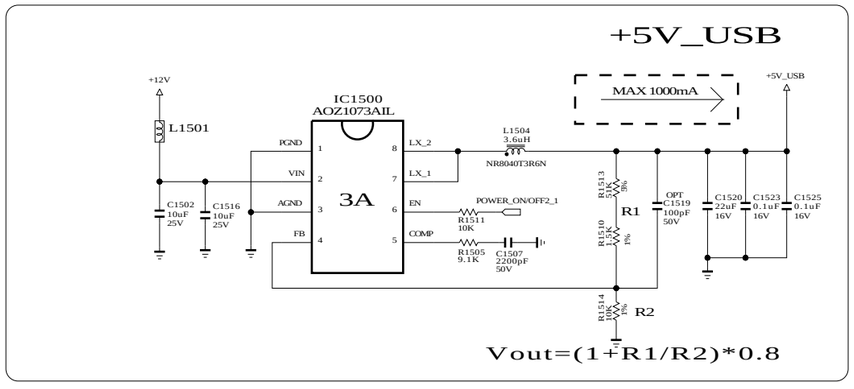
BCM DDR 1.8V



BCM A2.5V



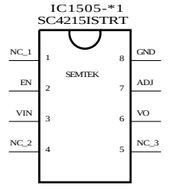
+5V_USB



Vout=(1+R1/R2)*0.8

5V/12V EXT PowerOut

IC1505-*1 SC4215ISTRT



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Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	POWER	SHEET	15

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CAN H-NIM/NIM TUNER for EU

TU2701-*1
TDFR-G155D

TU2701-*2
TDFR-G055D

TU2701-*3
TDFR-G135D(C)

TU2701
TDFR-G135D

HORIZONTAL_NIM

close to TUNER

RF_S/W_CNTL
BST_CNTL
+B1[5V]
NC[RF_AGC]
AS
SCL[A_DEMOD]
SDA[A_DEMOD]
NC(IF_TP)
SIF
NC
VIDEO
GND
1.2V
3.3V
RESET
2.5V
SCL[D_DEMOD]
SDA[D_DEMOD]
ERR
SYNC
VALID
MCL
D0
D1
D2
D3
D4
D5
D6
D7

31

SHIELD

R2754 0 OPT — RF_SWITCH_CTL 001:F2

R2720 0

C2701 0.1uF 16V

C2704 100pF 50V

C2706 0.1uF 16V

+5V_TU

OPTION : RF AGC

C2708 0.1uF 16V OPT

C2709 10uF 10V OPT

Q2700 2SC3052 OPT

R2724 10K OPT — 001:F2 IF_AGC_SEL

R2700 0 OPT

C2702 0.1uF 16V

33 R2726 — 001:I4 SCL0_3.3V

33 R2727 — 001:I4 SDA0_3.3V

C2712 18pF 50V

C2714 18pF 50V

+1.2V_TU

+3.3V_TU

C2700 100pF 50V

C2703 0.1uF 16V

C2705 100pF 50V

C2707 0.1uF 16V

R2721 100

R2723 100K

TUNER_RESET 001:G5

C2710 0.1uF 16V

+2.5V_TUA

R2701 0

C2733 0.1uF 16V

R2728 100 — SCL2_3.3V

R2729 100 — SDA2_3.3V

C2711 22pF 50V

C2713 22pF 50V

R2757 47 — FE_TS_ERR

R2717 47 — FE_TS_SYNC 002:D1;045:X5

R2716 47 — FE_TS_VAL 027:AH22

R2711 47 — FE_TS_DATA_CLK 002:D1;045:X5

045:X12 FE_TS_DATA[0-7]

R2709 47 — FE_TS_DATA[0]

R2708 47 — FE_TS_DATA[1]

R2707 47 — FE_TS_DATA[2]

R2710 47 — FE_TS_DATA[3]

R2705 47 — FE_TS_DATA[4]

R2706 47 — FE_TS_DATA[5]

R2704 47 — FE_TS_DATA[6]

R2703 47 — FE_TS_DATA[7]

Close to the tuner

R2725 0

R2722 0 OPT — 002:D1 FE_TS_SERIAL

+5V_TU

L2700 BLM18PG121SN1D

R2738 0

Q2701 ISA1530AC1

R2740 2.2K

R2742 10K

C2718 0.01uF 25V

Q2703 2SC3052

R2745 10K — 001:F2 LNA2_CTL/BOSTER_CTL

+5V_TU

R2746 470

R2749 82 — 003:A3 TU_SIF

Q2704 ISA1530AC1

R2743 4.7K

+5V_TU

R2739 200

R2741 200

TU_CVBS 003:A3

Q2702 ISA1530AC1

+5V_TU

R2702 200

R2712 200

041:I7 ATV_OUT

Q2705 ISA1530AC1

IC2702
NL17SZ08DFT2G

+3.3V_TU

FE_TS_VAL

FE_TS_ERR

C2736 0.1uF 16V

R2758 47 — FE_TS_VAL_ERR

+3.3V_TU

L2703
CIC21J501NE

C2715 22uF 16V

C2716 100pF 50V

R2731 22K 1% R1

R2756 18K 1% R2

IC2701
MP2212DN

Close to IC

10K R2732015:E7;015:I6;007:Q17;089:AI24 POWER_ON/OFF2_2

FB

GND

IN

BS

EN/SYNC

SW_2

SW_1

VCC

3A

R2713 75K 1/8W 1%

L2704 22uH NR8040T220M

C2720 0.1uF 50V

R2719 0

R2718 10 1/10W 1%

C2717 1uF 10V

Vout=0.8*(1+R1/R2)

+1.2V_TU

C2730 22uF 16V

C2731 0.1uF

C2735 22uF 16V

+3.3V_NORMAL

+3.3V_TU

L2702
CIC21J501NE

60mA

C2722 0.1uF 16V

C2724 0.1uF 16V

C2728 22uF 16V

C2734 0.1uF 16V

+5V_NORMAL

+5V_TU

L2701
BLM18PG121SN1D

200mA

C2721 0.1uF 16V

C2725 0.1uF 16V

C2727 22uF 16V

C2729 22uF 16V

+3.3V_TU

+2.5V_TUA

IC2700
AZ2940D-2.5TRE1

VIN

$0.11

VOUT

GND

C2719 0.1uF 16V

R2744 1

C2723 10uF 10V

C2726 0.1uF 16V

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Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	TUNER	SHEET	27

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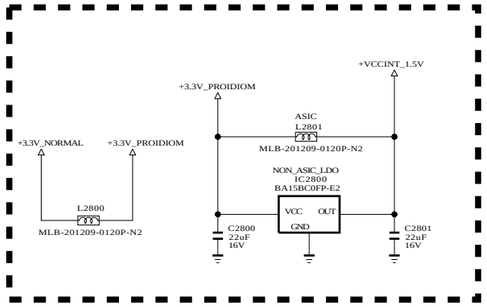

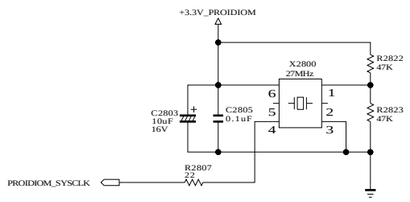

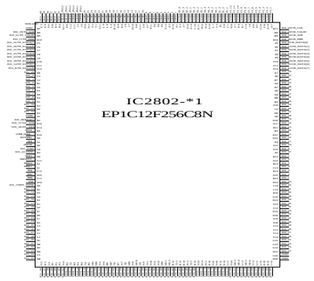

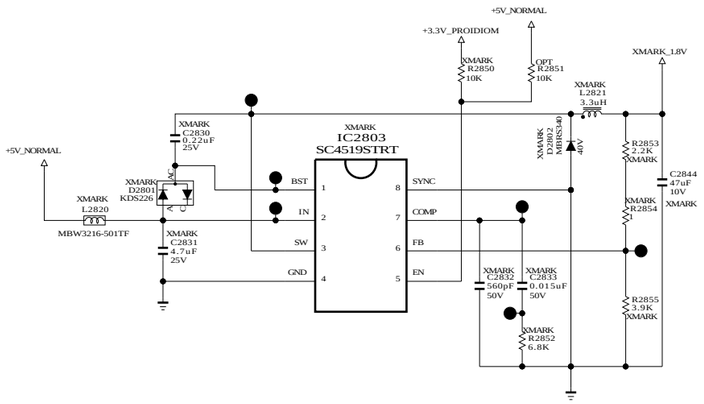

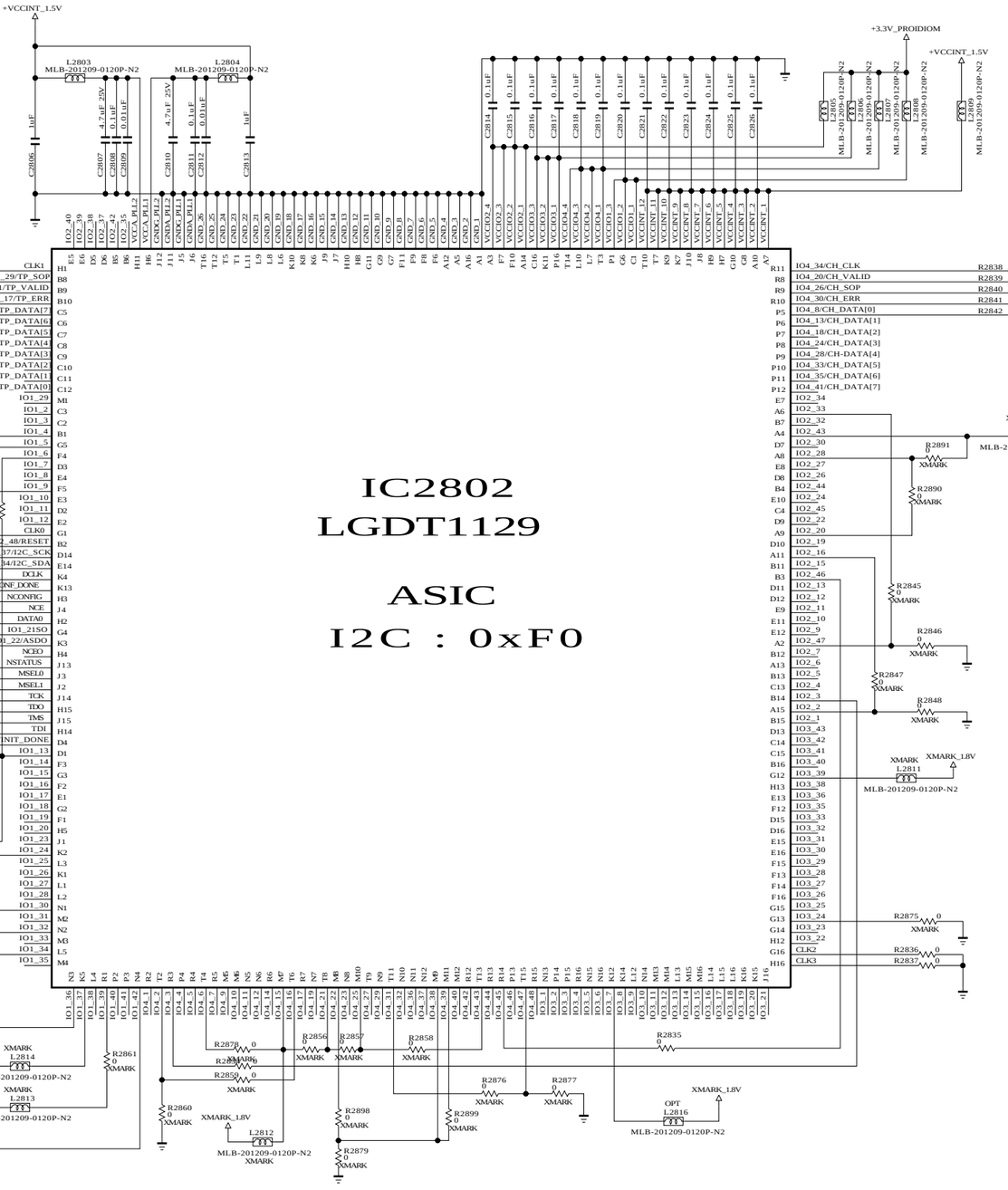

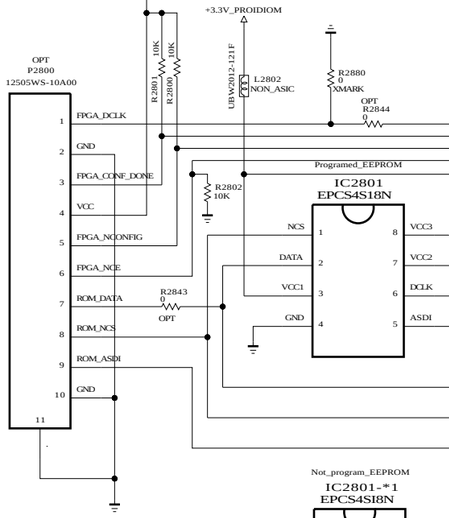

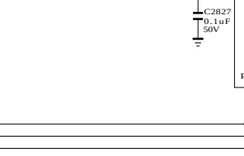

IC2802
LGDT1129

ASIC
I2C : 0xF0

FPGA Program I/F

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

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LG ELECTRONICS

Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	Pro:Idiom	SHEET	28 /

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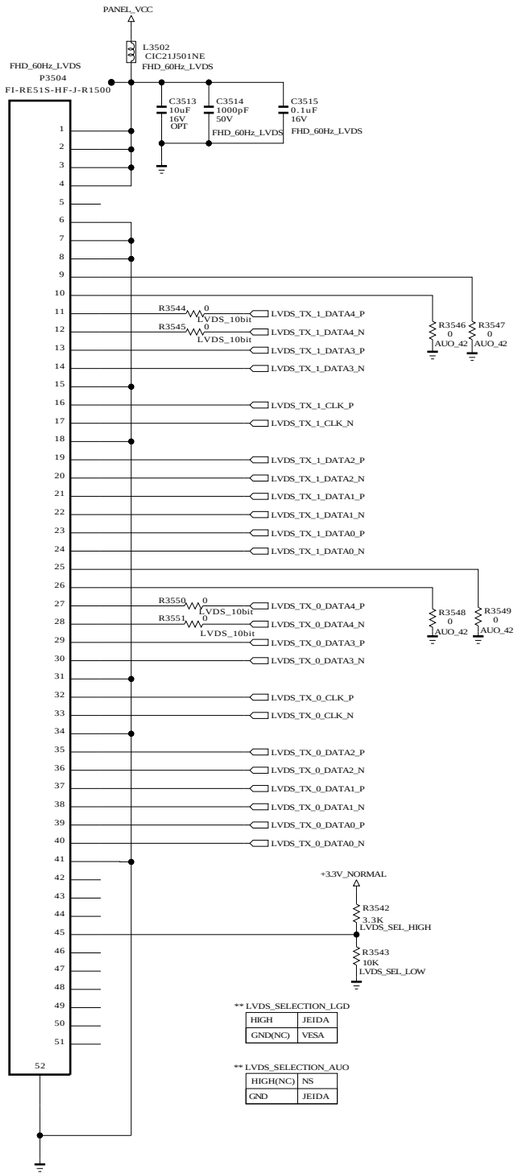
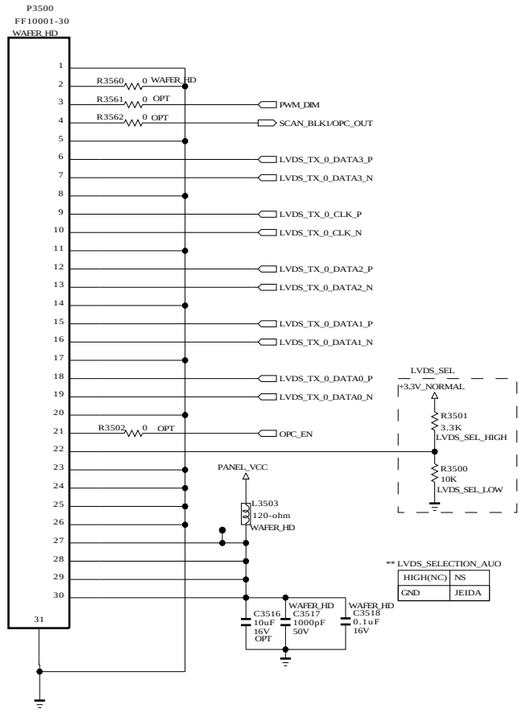
LGE Internal Use Only

From BCM FHD

[51Pin LVDS Connector]
(For FHD 60/120Hz)



[30Pin LVDS Connector]
(For HD 60Hz_Normal)



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Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	LVDS WAFER	SHEET	35 /

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LGE Internal Use Only

CCFL = 20V

Edge_LED 32~47 Inch = 20V

55 Inch & IOP Module = 24V

120 mA

+24V
L3800
MLB-201209-0120P-N2
+24V_AMP
C3800 0.1uF 50V

+3.3V_NORMAL
IC504
AP1117E18G-13
IN
3 Vd=1.4V 1
2
ADJ/GND
OUT
+1.8V_AMP
R474 1
C548 0.1uF 16V
C549 10uF 10V
C550 0.1uF 16V

WAFER-ANGLE
SPK_L+ R536 0 SPK_L+
SPK_L- R537 0 SPK_L-
SPK_R+ R538 0 SPK_R+
SPK_R- R539 0 SPK_R-
P501

+24V_AMP
C515 0.1uF 50V
C519 0.1uF 50V
C521 10uF 35V
EMI R535 3.3
EMI C547 0.01uF 50V

D501 1N4148W 100V OPT
D502 1N4148W 100V OPT
R519 12
R526 12
C529 390pF 50V
C530 390pF 50V
R520 12
R524 12
L507 AD-9060
2S 2F
1S 1F
15uH
C534 0.47uF 50V
C536 0.1uF 50V
C537 0.1uF 50V
R527 4.7K
R528 4.7K
SPK_L+
SPK_L-
SPEAKER_L

+3.3V_NORMAL
L504 BLM18PG121SN1D
C514 22000pF 50V
C518 22000pF 50V
C520 1uF 25V

AMP_RESET_N
C506 1000pF 50V
AUD_MASTER_CLK
C512 1uF 25V
C509 0.1uF

+1.8V_AMP
L502 BLM18PG121SN1D
L501 BLM18PG121SN1D
C504 100pF 50V
C508 1000pF 50V
R508 3.3K
OPT C501 10uF 10V
C502 0.1uF 16V
OPT C503 10uF 10V
C505 0.1uF 16V

IC501
NTP7000
EAN60969601
NTP-7000

1	BST1A	42	NC
2	VDR1A	41	VDR2A
3	/RESET	40	BST2A
4	AD	39	PGND2A_2
5	DGND_1	38	PGND2A_1
6	GND_IO	37	OUT2A_2
7	CLK_I	36	OUT2A_1
8	VDD_IO	35	PVDD2A_2
9	DGND_PLL	34	PVDD2A_1
10	AGND_PLL	33	PVDD2B_2
11	LF	32	PVDD2B_1
12	AVDD_PLL	31	OUT2B_1
13	DVDD_PLL	30	PGND2B_2
14	GND	29	

15	DGND_2	28	
16	DVDD	27	PGND2B_1
17	SDA/TA	26	BST2B
18	SCK	25	VDR2B
19	SDA	24	PVDD2B_1
20	SCL	23	MONITOR2
21	MONITOR0	22	MONITOR1
22	MONITOR1	21	MONITOR0
23	MONITOR2	20	SCL
24	PVDD1B_1	19	SDA
25	VDR1B	18	SCK
26	BST1B	17	SDA/TA
27	PGND1B_1	16	DVDD
28		15	DGND_2

56	EP_PAD	43	PGND1A_2
55	PGND1A_1	44	OUT1A_2
54	OUT1A_1	45	PVDD1A_2
53	PVDD1A_1	46	PVDD1A_1
52	PVDD1B_2	47	PVDD1B_2
51	PVDD1B_1	48	OUT1B_2
50	OUT1B_1	49	PGND1B_2
49	PGND1B_2	50	PVDD1B_1
48	BST1B	51	OUT1B_1
47	VDR1B	52	PGND1B_1
46	PGND1B_1	53	BST1B
45	PGND1A_1	54	VDR1B
44	OUT1A_1	55	PGND1A_1
43	PGND1A_2	56	EP_PAD

THERMAL 57

C522 25V1uF
C525 22000pF 50V
D503 1N4148W 100V OPT
D504 1N4148W 100V OPT
R521 12
R525 12
C531 390pF 50V
C532 390pF 50V
R522 12
R523 12
L506 AD-9060
2S 2F
1S 1F
15uH
C535 0.47uF 50V
C538 0.1uF 50V
C539 0.1uF 50V
R529 4.7K
R530 4.7K
SPK_R+
SPK_R-
SPEAKER_R

+24V
C526 0.1uF 50V
C527 0.1uF 50V
C528 10uF 35V
C524 22000pF 50V

+1.8V_AMP
OPT C511 10uF 10V
C513 0.1uF 16V

AUD_LRCH R503 100
AUD_LRCK R504 100
AUD_SCK R505 100
SDA1_3.3V R506 100
SCL1_3.3V R507 100
C507 18pF 50V
C510 18pF 50V
C546 22pF 50V EMI
C544 22pF 50V EMI
C545 22pF 50V EMI

C517 1uF 25V
C516 1000pF 50V
R513 0 OPT
POWER_DET
+3.5V_ST
R515 10K
R514 100
Q501 2SC3052
R517 10K
AMP_MUTE

IC501:*1
NTP-7100

EXT_ROUT_N R500 33K 1%
EXT_ROUT_P R501 33K 1%
R540 27K 1%
R542 1K 1%
C551 39pF
C553 10uF
EXT_R_AMP
+5V_NORMAL
R543 100
C552 22uF 16V
R510 68K
R511 68K
R512 68K
R516 68K
C500 39pF
C523 39pF
IC500 KA4558D
4 VEE
3 IN1(+)
2 IN1(-)
1 OUT1
5 IN2(+)
6 IN2(-)
7 OUT2
8 VCC
EXT_LOUT_P R502 33K 1%
EXT_LOUT_N R509 33K 1%
C554 10uF
EXT_L_AMP
C533 39pF
R518 27K 1%
R541 1K 1%

EXT_SPEAKER_DClass_AMP

+24V
L505 CB3216UA121
L500 CB3216UA121
C561 0.1uF 50V
C564 0.1uF 50V
C565 10uF 35V
C573 4.7uF 50V
C574 4.7uF 50V

IC502
TPA3124D2PWPR

1	PVCCL_1	24	PGNDL_2
2	SD	23	PGNDL_1
3	PVCCL_2	22	LOUT
4	MUTE	21	BSL
5	LIN	20	AVCC_2
6	RIN	19	AVCC_1
7	BYPASS	18	GAIN0
8	AGND_1	17	GAIN1
9	AGND_2	16	BSR
10	PVCCR_1	15	ROUT
11	VCLAMP	14	PGNDR_2
12	PVCCR_2	13	PGNDR_1

SUBAMP_SD R546 100
SUBAMP_MUTE R531 100
EXT_L_AMP C557 1uF
EXT_R_AMP C558 1uF
C540 1uF 50V
C541 1uF 50V
C556 1uF 16V
C559 1uF 16V
C560 0.1uF 50V
C562 0.22uF 50V
C563 0.22uF 50V
L510 22.0uH
L511 22.0uH
R552 4.7K
R553 4.7K
C566 1uF 50V
C567 1uF 50V
C568 0.47uF 50V
C569 0.47uF 50V
C570 100uF 25V
C571 100uF 25V
EXT_OUT_L
EXT_OUT_R
R548 10K
R549 10K OPT
R550 10K OPT
R551 10K

EXT_SPEAKER

JK500
PEJ027-01
E_SPRING 3
T_TERMINAL1 6A
B_TERMINAL1 7A
R_SPRING 4
T_SPRING 5
B_TERMINAL2 7B
T_TERMINAL2 6B
EXT_OUT_R
EXT_OUT_L
OPT C572 1uF 10V
OPT C575 1uF 10V

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LG ELECTRONICS

Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	AUDIO AMP	SHEET	38

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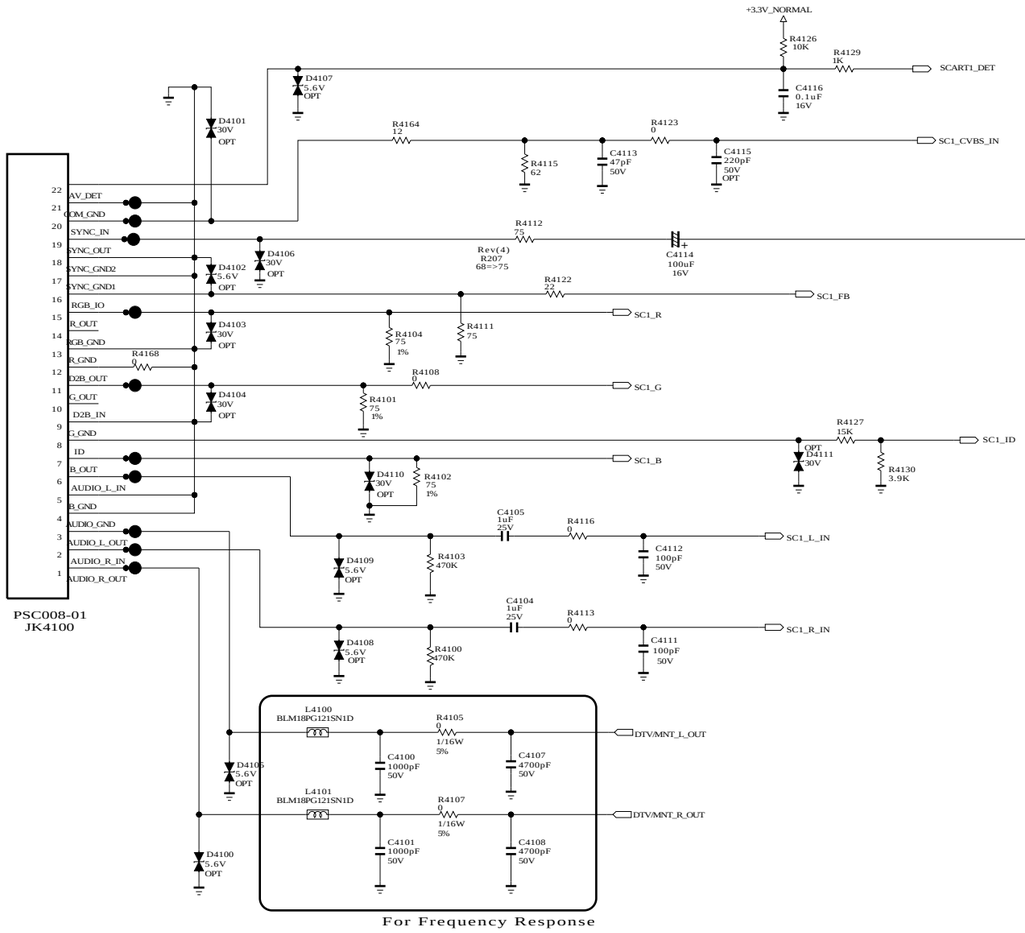
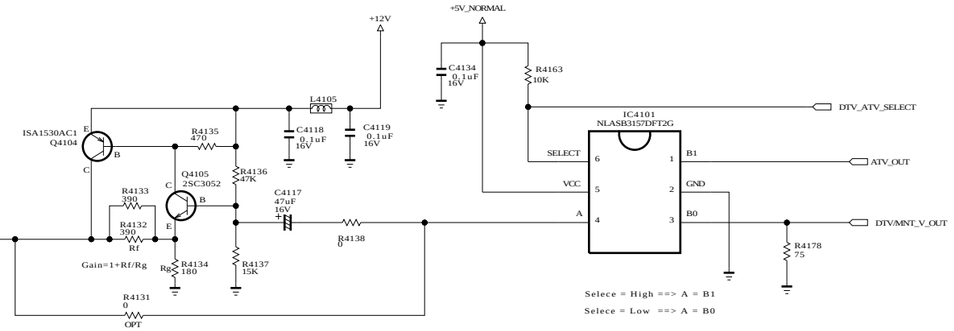
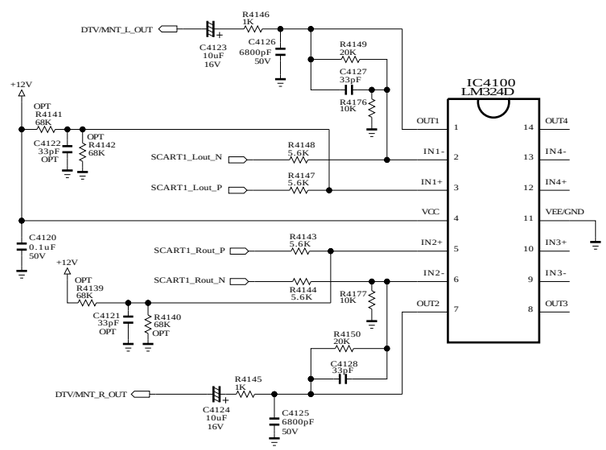
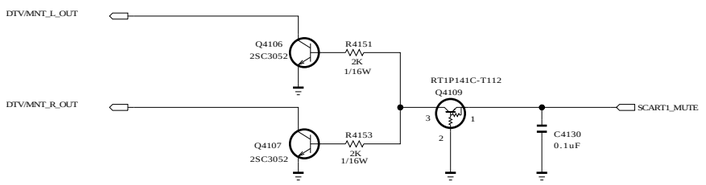




Audio Out Amp

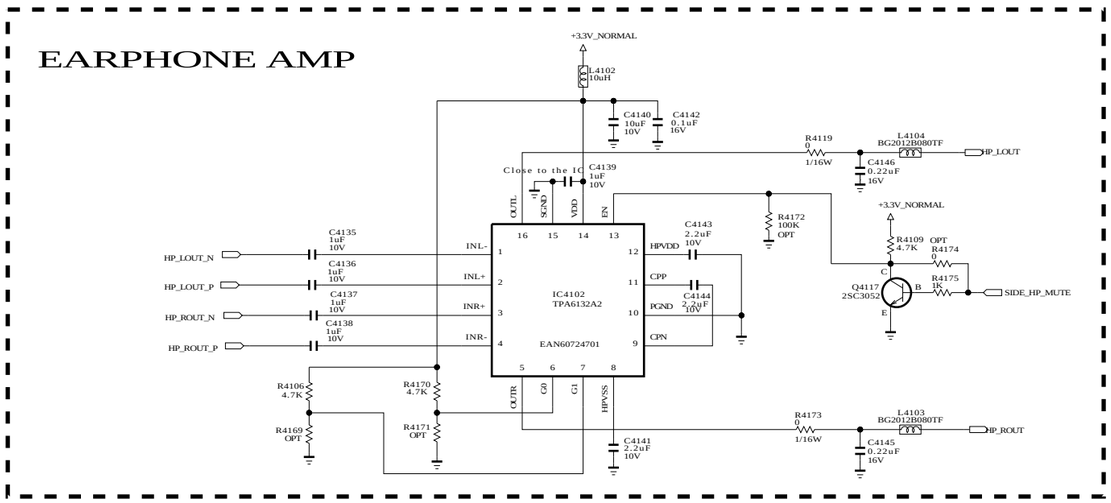
EU_SCART [OPT]





EARPHONE BLOCK

EARPHONE AMP



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Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.12.20
BLOCK	SCART&HP	SHEET	41

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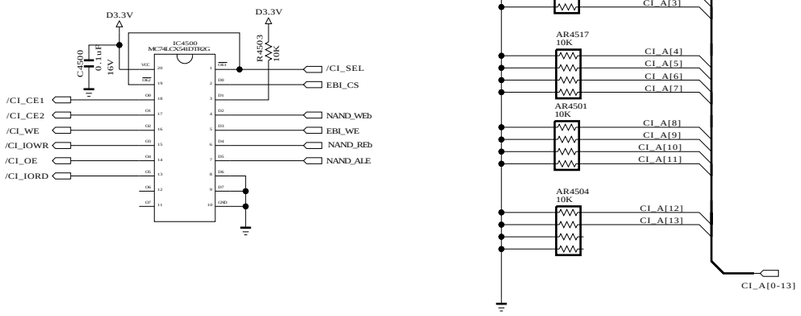
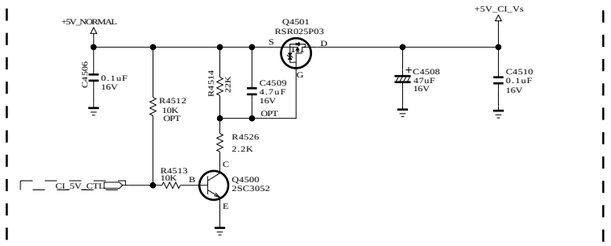
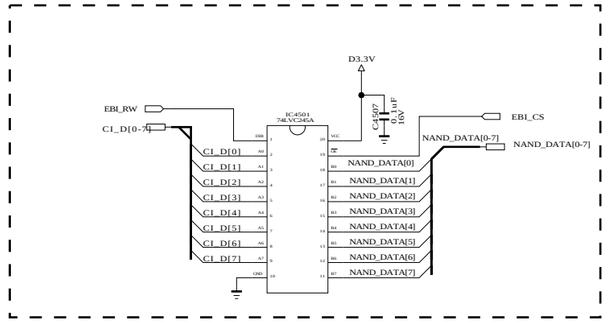
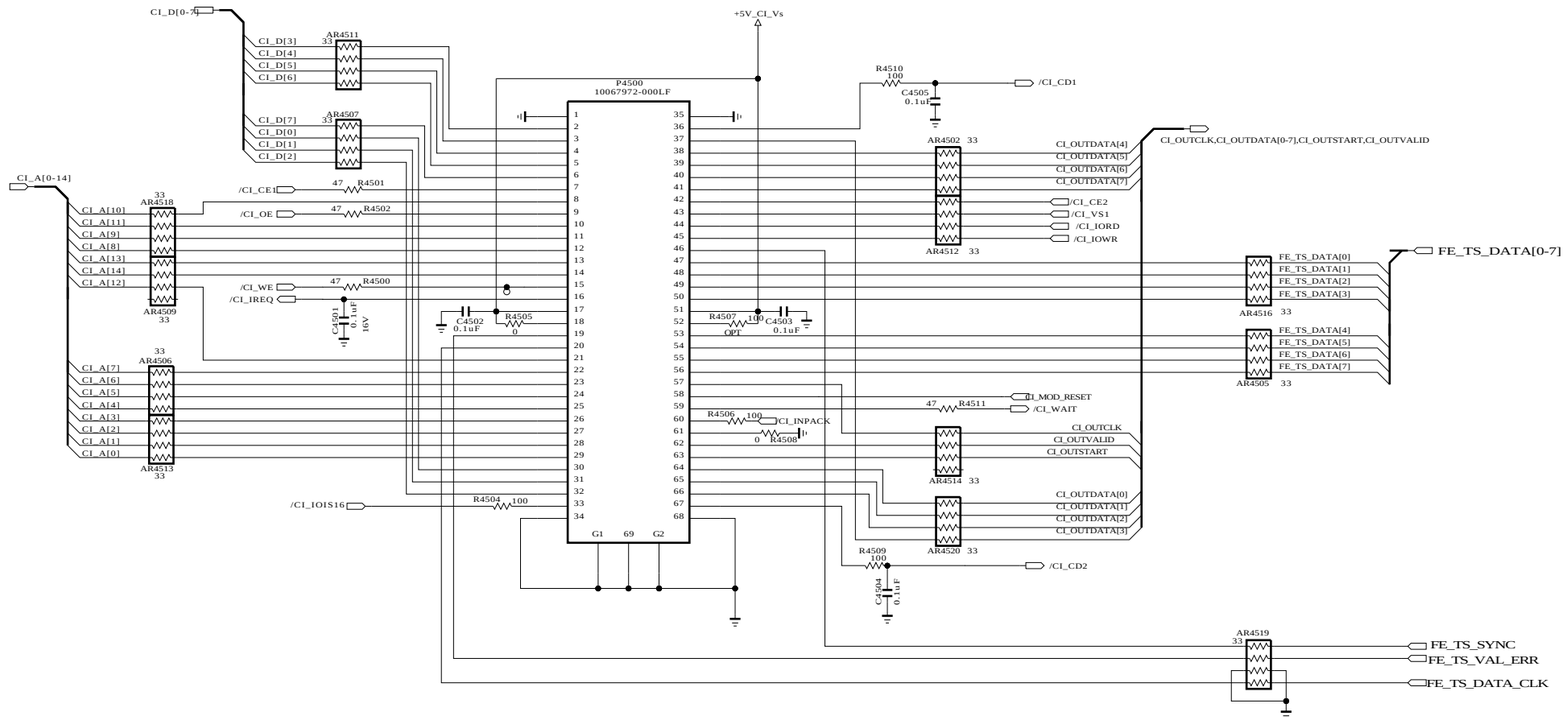
CI CONTROL BUFFER



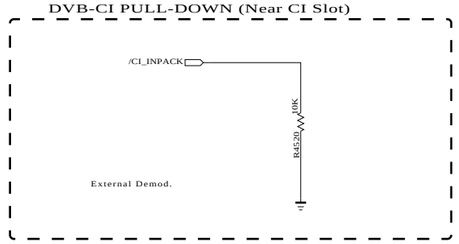
CI POWER ENABLE CONTROL



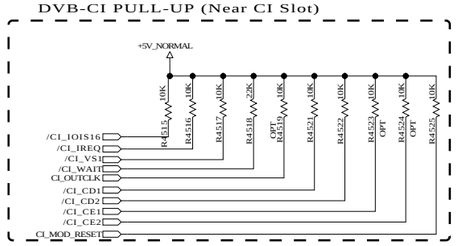




DVB-CI PULL-DOWN (Near CI Slot)



DVB-CI PULL-UP (Near CI Slot)



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Chameleon(EU_GP2_BCM3556)

MODEL	xxLV375H-ZA	DATE	2010.01.23
BLOCK	PCMCI	SHEET	45

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